THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF TRANSPORTATION
MASSACHUSETTS HIGHWAY DEPARTMENT

EOT

DEVAL L. PATRICK
GOVERNOR

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LIEUTENANT GOVERNOR

JAMES A. ALOISI JR.
SECRETARY

LUISA PAIEWONSKY
COMMISSIONER

RE: Boston Cambridge: Longfellow Bridge Rehabilitation

To whom it may concern:

I have enclosed for your review, as required by 301 CMR 11.16 of the Massachusetts Environmental Policy Act Regulations, a copy of the Environmental Notification Form for the above-mentioned project. This document was filed with the Executive Office of Energy and Environmental Affairs on March 16, 2009. Comments on this project are due by May 8, 2009.

All comments should be sent to:

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

Please send a copy of your comments to:

Massachusetts Highway Department
Environmental Programs
Attn: Jessica Kenny
10 Park Plaza, Room 7360
Boston, MA 02116-3973

If you need any additional information regarding the subject project, please contact Jessica Kenny, Assistant Manager, Environmental Programs, Construction Division at (617) 973-7633.

Sincerely,

Kevin M. Walsh

Kevin M. Walsh
Director of Environmental Services
Environmental Section

10 Park Plaza, Room 4260 ▪ Boston, MA 02116 ▪ Phone: 617-973-7484 ▪ Fax: 617-973-7764

Commonwealth of Massachusetts

ENF

Executive Office of Environmental Affairs ■ MEPA Office

Environmental Notification Form

For Office Use Only Executive Office of Environmental Affairs
EOEA No.:
MEPA Analyst:

The information requested on this form must be completed to begin MEPA Review in accordance with the provisions of the Massachusetts Environmental Policy Act, 301 CMR 11.00.

Project Name: **Longfellow Bridge Rehabilitation Project**		
Street: Cambridge Street in Boston; Main Street in Cambridge		
Municipality: Boston and Cambridge	Watershed: Boston Harbor	
Universal Transverse Mercator Coordinates: 15393678 N, 1079704 E	Latitude: 42° 21' 41" Longitude: 71° 04' 31"	
Estimated commencement date: Fall 2010 or Summer 2010 depending on construction phasing	Estimated completion date: 36-48 Months after commencement of construction	
Approximate cost: $280 million	Status of project design: 25 % complete	
Proponent: MassHighway in Conjunction with the Department of Conservation & Recreation		
Street: 10 Park Plaza		
Municipality: Boston	State: MA	Zip Code: 02116
Name of Contact Person From Whom Copies of this ENF May Be Obtained: Jessica Kenny, Assistant Manager Environmental Programs		
Firm/Agency: MassHighway	Street: 10 Park Plaza, Room 4260	
Municipality: Boston	State: MA	Zip Code: 02116
Phone: (617) 973-7633	Fax: (617) 973-8038	E-mail: jessica.kenny@mhd.state.ma.us

Does this project meet or exceed a mandatory EIR threshold (see 301 CMR 11.03)?
☐Yes ☒No

Has this project been filed with MEPA before?
☐Yes (EOEA No.___________) ☒No

Has any project on this site been filed with MEPA before?
☐Yes (EOEA No.___________) ☒No

Is this an Expanded ENF (see 301 CMR 11.05(7)) requesting:
a Single EIR? (see 301 CMR 11.06(8)) ☐Yes ☒No
a Special Review Procedure? (see 301CMR 11.09) ☐Yes ☒No
a Waiver of mandatory EIR? (see 301 CMR 11.11) ☐Yes ☒No
a Phase I Waiver? (see 301 CMR 11.11) ☐Yes ☒No

Identify any financial assistance or land transfer from an agency of the Commonwealth, including the agency name and the amount of funding or land area (in acres):
The construction of this project is being funded as part of the Commonwealth of Massachusetts' Accelerated Bridge Program as signed by Governor Patrick in May 2008. MassHighway will provide 20% of the construction cost for this project; the Federal Highway Administration will provide the remaining 80% of the construction cost for this project through their Bridge Replacement and Rehabilitation Program.

Are you requesting coordinated review with any other federal, state, regional, or local agency?
☐Yes (Specify _____) ☒No

List Local or Federal Permits and Approvals:
Federal: A Section 106 Review, a Programmatic Section 4(f) Evaluation, an Environmental Assessment in accordance with the National Environmental Policy Act, a U.S. Army Corps of Engineers Programmatic General Permit, a U.S. Coast Guard Construction Letter. Local: Order of Conditions in accordance with the Wetlands Protection Act.

Which ENF or EIR review threshold(s) does the project meet or exceed (see 301 CMR 11.03):

☐ Land
☐ Water
☐ Energy
☐ ACEC
☐ Rare Species
☐ Wastewater
☐ Air
☐ Regulations
☐ Wetlands, Waterways, & Tidelands
☒ Transportation
☐ Solid & Hazardous Waste
☒ Historical & Archaeological Resources

Summary of Project Size & Environmental Impacts	**Existing**	**Change**	**Total**	**State Permits & Approvals**
LAND				☒ Order of Conditions ☐ Superseding Order of Conditions ☐ Chapter 91 License ☒ 401 Water Quality Certification ☐ MHD or MDC Access Permit ☐ Water Management Act Permit ☐ New Source Approval ☐ DEP or MWRA Sewer Connection/ Extension Permit ☒ Other Permits (including Legislative Approvals) – Specify:
Total site acreage	11.90			
New acres of land altered		None		
Acres of impervious area	3.50	0.10	3.60	
Square feet of new bordering vegetated wetlands alteration		None		
Square feet of new other wetland alteration		None		
Acres of new non-water dependent use of tidelands or waterways		None		
STRUCTURES				
Gross square footage	None	None	None	
Number of housing units	None	None	None	
Maximum height (in feet)	94	None	94	
TRANSPORTATION				
Vehicle trips per day	28,000	0	28,000	
Parking spaces	None	None	None	
WATER/WASTEWATER				
Gallons/day (GPD) of water use	None	None	None	
GPD water withdrawal	None	None	None	
GPD wastewater generation/ treatment	None	None	None	
Length of water/sewer mains (in miles)	None	None	None	

Other State Permits and Approvals: NPDES General Permit for Stormwater Discharges for

Construction Activities.

CONSERVATION LAND: Will the project involve the conversion of public parkland or other Article 97 public natural resources to any purpose not in accordance with Article 97?
☐Yes ☒No. Areas of public parkland, namely undeveloped sections of the Charles River Reservation on the Boston side of the bridge, will be occupied by a slightly widened sidewalk at the approaches to the bridge. On the north side of the bridge, about 350 square feet of parkland will be used to widen the sidewalk and bike lane; on the south side of the bridge about 1,200 square feet will be used for the sidewalk improvements. The sidewalk changes will be within the area presently used for pedestrian/vehicular traffic and that use will not be changed. A walkway is consistent with parkland use and does not require Article 97 approval. The Department of Conservation and Recreation will retain care and custody of both the bridge and the park. The Commonwealth of Massachusetts will retain ownership of the Bridge.

Will it involve the release of any conservation restriction, preservation restriction, agricultural preservation restriction, or watershed preservation restriction?
☐Yes (Specify__ ☒No

RARE SPECIES: Does the project site include Estimated Habitat of Rare Species, Vernal Pools, Priority Sites of Rare Species, or Exemplary Natural Communities?
☐Yes (Specify) ☒No

The project is in an urban area of riverfront parklands and arterial roads. Massachusetts Natural Heritage and Endangered Species Program Certified Vernal Pool Mapping (Data Layer CVP), Priority Habitat Mapping (Data Layer PHAB), and Wetland Estimated Habitat Mapping (Data Layer WHAB) show no Estimated Habitat of Rare Species, Vernal Pools, Priority Sites of Rare Species, or Exemplary Natural Communities in the project area. The Charles River is a significant warm water fisheries resource and an anadromous fish run.

HISTORICAL /ARCHAEOLOGICAL RESOURCES: Does the project site include any structure, site or district listed in the State Register of Historic Place or the inventory of Historic and Archaeological Assets of the Commonwealth?
☒Yes (Specify)☐No

The Longfellow Bridge is a contributing element in the State Register-listed Charles River Basin Historic District. The bridge and the district are each listed in the Inventory of Historic and Archaeological Assets of the Commonwealth.

No listed or inventoried archaeological sites are included in the project site.

If yes, does the project involve any demolition or destruction of any listed or inventoried historic or archaeological resources?
☐Yes (Specify____) ☒No

The deteriorated elements of the bridge that are critical to its historic/architectural character will be restored in accordance with the Secretary of the Interior's Standards for Restoration. Deteriorated elements of lesser (or no) historic/architectural significance will be treated in accordance with the Secretary of the Interior's Standards for Rehabilitation.

No listed or inventoried archaeological sites will be destroyed.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN: Is the project in or adjacent to an Area of Critical Environmental Concern?
☐Yes (Specify____) ☒No

The project area is not within any Area of Critical Environmental Concern according to the "ACEC Statewide

Map", Executive Office of Environmental Affairs, Department of Environmental Management, March 2003.

PROJECT DESCRIPTION: The project description should include **(a)** a description of the project site, **(b)** a description of both on-site and off-site alternatives and the impacts associated with each alternative, and **(c)** potential on-site and off-site mitigation measures for each alternative (You may attach one additional page, if necessary.)

The Existing Bridge and the Surrounding Area

The Massachusetts Highway Department (MassHighway) and the Massachusetts Department of Conservation and Recreation are undertaking a major project for the rehabilitation of the Longfellow Bridge across the Charles River between Boston and Cambridge. The main goals of this federally funded project are to repair deteriorated parts of the structure and to make improvements to its ramped approaches. All repairs and modifications will be consistent with the historic character of the bridge.

Background

The Longfellow (originally, the Cambridge) Bridge is one of the most architecturally distinguished bridges in Massachusetts. Located on the site of the 1793 West Boston Bridge, this graceful steel and granite structure was completed in 1908, and renamed to honor Henry Wadsworth Longfellow in 1927. The bridge joins Cambridge Street in Boston with Main Street in Cambridge and carries the Massachusetts Bay Transportation Authority (MBTA) Red Line and two way vehicular traffic across the Charles River. The bridge presently carries 28,000 motor vehicles, 90,000 transit users, and significant numbers of pedestrians and cyclists each day.

The 1908 bridge was extended in 1956 and rehabilitated in 1959. The bridge today consists of eleven original open-spandrel steel arch spans plus two later steel girder approach spans at the Cambridge end. The bridge has an overall length of 2,135 feet, and a deck width of 105 feet, which includes a 27-foot fenced median occupied by the Red Line. The existing cross-section provides an upstream 6-foot sidewalk and a 33-foot wide roadway while the downstream side consists of a 10-foot sidewalk and 29-foot wide roadway. The bridge's substructure is built of granite block masonry and consists of ten hollow piers and two hollow abutments. The two central piers carry the signature pairs of neoclassically inspired dressed granite towers that have given the bridge its popular nickname – the Salt and Pepper Bridge.

The Bridge has been undergoing regular inspections and maintenance since August 2007 and a detailed timeline has been included as Attachment 5.

Proposed Work

MassHighway and the Department of Conservation and Recreation have selected a consultant team led by Jacobs Inc. to provide a preliminary design for the rehabilitation of the Longfellow Bridge. In this design, the bridge's distinctive architectural features will be preserved or restored, while the deteriorated structural elements of the bridge are carefully rehabilitated. All new elements of the work will be sensitively designed to complement the bridge's historic character and its prominent position within the historic Charles River basin.

A primary objective of the proposed rehabilitation is to address the bridge's current structural deficiencies, upgrade its structural capacity (where appropriate), and bring the bridge up to modern code. In particular, the structural steel elements supporting the bridge deck have deteriorated and require upgrading, and the abutments will have to be modified slightly to allow the sidewalk approaches to meet ADA standards. At the same time, the bridge's ornate pedestrian railings will be restored or replicated, its masonry elements will be cleaned and conserved, and an appropriate new bridge lighting system will be designed. Areas on the riverbanks disturbed by the project will be carefully landscaped to tie the bridge into its historic setting.

Public Involvement

Public informational meetings, which provided attendees with an overview of the project and updated them on progress, were held on September 22, 2005 and May 24, 2006. Advance notices of these public meetings, which also included mailers with project descriptions, were sent to the circulation list included in Attachment 4.

On May 17, 2006, a detailed presentation on the project was made to the Section 106 Consulting Parties, which comprise the following organizations: Massachusetts Historical Commission, Boston Landmarks Commission, Cambridge Historical Commission, Department of Conservation and Recreation, MassHighway, and Federal Highway Administration. Copies of several technical reports concerning design and construction of the project were provided to the consulting parties at this meeting. A second Section 106 Consulting Parties meeting, to discuss the project's draft ENF and other progress to that point, was held on July 29, 2008.

A project website, which includes a project description and provides links to a slide presentation from the most recent public meeting, is maintained at the following URL:

http://www.mhd.state.ma.us/default.asp?pgid=longfellowbridge/longfellow&sid=level2

Parkland Impacts

Areas of public parkland, namely undeveloped sections of the Charles River Reservation on the Boston side of the bridge, will be occupied by a slightly widened sidewalk at the approaches to the bridge. On the north side of the bridge, about 350 square feet of parkland will be used to widen the sidewalk and bike lane; on the south side of the bridge about 1,200 square feet will be used for the sidewalk improvements. The sidewalk changes will be within the area presently used for pedestrian/vehicular traffic and that use will not be changed. A walkway is consistent with parkland use and does not require Article 97 approval. The Department of Conservation and Recreation will retain care and custody of both the bridge and the park. The Commonwealth of Massachusetts will retain ownership of the Bridge.

Boston Approach Modifications

The above parkland impacts are caused by proposed modifications to the connection of the Longfellow Bridge to the inbound and outbound approaches on the Boston side of the Charles River. The Boston connections are complicated by the fact that the available space between the MBTA Reservation and the outside of the bridge has been constricted by the Charles/MGH Station platform extensions. There is currently no sidewalk to the east of the Boston abutment. This project must restore an ADA compliant sidewalk across the entire bridge while satisfying MassHighway design standards and maintaining the historical character of the bridge.

The typical roadway cross section across the bridge which must be incorporated into the approach design measures 37.5 feet. The available space to fit the approach alignment varies, but at the narrowest location, the "pinch-point" at the intersection of Span 1 and the abutment, the existing dimension from the bridge railing to the Jersey barrier at the MBTA reservation is 30.5 feet. Based on the total desirable width, it is clear that to provide the elements required for the bridge cross-section, we must either: (i) widen the bridge; (ii) accept dimensions lower than desirable; or (iii) modify the MBTA reservation to create more space.

We evaluated several alternatives for widening the bridge including dismantling, moving and rebuilding the entire abutment tower and staircase to the south. Since the current available space at the tower itself does not impose a major constriction, the tower re-location was considered unwarranted both from historical impacts and a cost perspective. We considered a more limited bridge widening scheme that provides additional space at the pinch-point by widening Span 1 between the Boston abutment and Pier 1 by around 2 feet.

We have discussed alternatives with the MBTA for modifying their platform area to provide more space to accommodate the revised roadway and we are continuously looking for ways to improve safety and add space for the MBTA reservation. Although the existing station has been rebuilt and the entrances have been moved to the east, for reasons associated with the start of a track curve, the location where the train stops at the platform could not be changed. Also the platform area cannot be reduced for safety reasons. We evaluated an alternative which modified the platform while maintaining the MBTA platform criteria, but this involved significant construction at the station, major modification to the station canopy, which is also a historic structure, and gained less than 12 inches at the "pinch-point". We considered other alternatives to have greater advantages and rejected this alternative.

Complete replacement of the existing Longfellow Bridge was considered as an alternative to rehabilitation during the earliest stages of project development. The existing, National Register-listed Bridge, however, is an icon – a powerful symbol of metropolitan Boston's civic pride in the opening years of the 20th century. Full replacement would also face permitting delays in other areas – particularly historic approvals as well as those involving water, hazardous materials, and parkland approvals. Finally, the design and construction of a full replacement bridge would make it difficult to maintain adequate vehicular, bicycle, pedestrian, and Red Line service on this crossing throughout the construction period – a major advantage of the proposed rehabilitation alternative.

The No Build Alternative was considered but due to public safety concerns from the deteriorating condition and the fact that recent repairs will only sustain service ability for a limited number of years, it was then determined that a more thorough rehabilitation scheme be proposed.

The three alternatives that we considered most appropriate for further consideration and discussion are presented in the attached figures and are summarized as follows:

Alternative 1: The available right-of-way at the pinch-point is increased by widening the bridge by 2 feet over the most easterly span, Span 1. East of the abutment tower, the existing granite wall will be dismantled and re-built approximately 12 feet to the south of the existing location. The sidewalk width provided is 5 feet and the bike lane is also generally 5 feet except that it is reduced to 4 feet for a short distance on either side of the pinch point. To the east of the tower, three travel lanes that meet MassHighway design criteria are provided, with the left roadway lane transitioning to a left turn lane, and the right roadway lane transitioning to two through lanes.

Alternative 2: The Bridge is not widened at the "pinch point" and the dimensions of the various roadway elements are locally reduced below desirable widths. The roadway lanes are reduced to 10.5 feet while both the sidewalk and bike lane are only 3.5 feet wide. East of the abutment tower, the existing granite wall will be dismantled and re-built approximately 12 feet to the south of the existing location. To the east of the tower, three travel lanes that meet MassHighway design criteria are provided, with the left roadway lane transitioning to a left turn lane, and the right roadway lane transitioning to two through lanes. The bike lane merges with the through lane. We also developed an Alternative 2A which instead of 10.5 feet travel lanes provides the more desirable 11 foot wide lanes with the additional foot required to achieve this taken from the sidewalk and the bike lane.

Alternative 3: The Bridge is not widened at the "pinch point" and the dimensions of the various roadway elements are locally reduced below desirable widths. The roadway lanes are 11 feet wide while both the sidewalk and bike lane are locally only 3 feet wide. Outside of the pinch point, the bike lane and sidewalk are maintained at 5 feet. East of the abutment, only two travel lanes are provided, with the existing granite wall remaining in its current location.

Based on our evaluation of these alternatives, we recommend implementation of Alternative 1. This alternative provides the most satisfactory solution for the vast majority of bridge users, and most closely conforms to current MassHighway design criteria. Although the bridge structure will be modified, the span widening can be designed in an architecturally sensitive manner. The re-location of the retaining walls will involve taking a narrow section of parkland, but this area currently provides very limited use, and the improvements in pedestrian access incorporated into the approach re-construction will create an overall enhancement to this section of the Esplanade.

The Construction Approach

MassHighway and the Department of Conservation and Recreation are currently investigating two options for the construction approach.

Option 1 Phases: This phasing option allows the bridge superstructure and deck to be restored and rehabilitated more rapidly than Option 2. Stage 1: The deck supporting the eastbound travel lanes and the inbound Red Line will be reconstructed first due to utility relocations. Westbound traffic will be detoured across the Charles River Dam Road (Monsignor O'Brien Highway). The outbound Red Line track will be relocated on to a temporary track on the existing westbound roadway and the inbound Red Line track will be shifted to the existing outbound side. The eastbound traffic will then be relocated to the inside westbound travel lane. The existing bridge deck under the eastbound travel lanes and inbound Red Line track will then be demolished and reconstructed. A second temporary Red line track will be constructed on the fast lane of the new eastbound roadway. Stage 2: The deck supporting the westbound roadway and the outbound Red Line track will be reconstructed in Stage 2. Eastbound traffic will be moved back to the inside eastbound roadway lane. The inbound Red Line track will be relocated to the second temporary track on the eastbound roadway, and the outbound Red Line will be relocated to the newly completed inbound track. The deck supporting westbound travel lanes and the outbound Red Line track will be demolished and reconstructed. Stage 3 (final configuration): Westbound travel lanes will be reopened, the inbound and outbound Red Line will be restored on to the new tracks, and both eastbound travel lanes will be re-opened.

Option 2 Phases: Bridge superstructure and deck will be restored and rehabilitated over a period of about 12 months longer than Option 1. The work will take place at only a limited portion of the total bridge width at a time so that transportation functions can be maintained as the work proceeds. There will be four phases to the work: Stage 1 Work below the eastbound fast lane and below the westbound slow lane, stage 2 work below the westbound fast lane and below the eastbound slow lane, stage 3 work below the Red Line inbound track area and stage 4 work below the Red Line outbound track area. Structural rehabilitation and restoration will take place in the area under the usual location of the Red Line Inbound Track. Some weekend shutdowns of the Red Line will be necessary during the course of the shifts and then the Red Line will continue to operate as usual.

In both construction stages, there will be one sidewalk open for use by pedestrians. Bike traffic will follow the roadway traffic detour in each stage.

Traffic Management: The only location that the bridge traffic is controlled by signalization is the approach to Charles Circle for the traffic going from Cambridge to Boston. Police details and traffic flagging personnel will monitor traffic flow throughout the construction period. Emergency vehicles will be given preference in day to day traffic management. Traffic that customarily uses the Longfellow Bridge may seek alternate routes during the construction period. Alternate crossings of the Charles River are the Charles River Dam Road (Monsignor O'Brien Highway) about half a mile to the north and Massachusetts Avenue over the Harvard Bridge about a mile to the south. The work on the spans of the bridge that are over Memorial Drive and over Storrow Drive will require closings of a lane or sometimes two lanes on these roadways. Off peak and nighttime work schedules will be used to reduce the impact of these lane closures. The river in the area of the bridge is the location of recreational boating and rowing. Much of the construction work over the water will involve barge based activities. Specific marine navigational channels may be closed but marine traffic will always be maintained. Notifications of impacts will be communicated to Mariners through the United States Coast Guard.

Construction Impacts: The space available in the immediate area of the bridge is extremely limited but a number of functions are necessary to support an efficient construction process. Employee parking will be discouraged. The removal and the delivery of materials to the site will generate traffic. Off peak and nighttime work schedules will be used to reduce the impact of the introduction of this additional traffic into the project area. There will be nighttime construction activities that will generate noise level concerns; dust generation, abrasive blasting, and painting will all create local air quality concerns. These impacts will be mitigated by performing abrasive blasting and painting within temporary enclosures around the work site. The details will be further refined as plans become more developed.

LAND SECTION – **all proponents must fill out this section**

I. Thresholds / Permits

A. Does the project meet or exceed any review thresholds related to **land** (see 301 CMR 11.03(1)
___ Yes _X_ No; if yes, specify each threshold:

II. Impacts and Permits

A. Describe, in acres, the current and proposed character of the project site, as follows:

	Existing	Change	Total
Footprint of buildings	__None__	__None__	__None__
Roadways, parking, and other paved areas	__3.50__	__0.10__	__3.60__
Other altered areas (describe)	__1.90__	__None__	__1.90__
Undeveloped areas	__None__	__None__	__None__

The total area of the project site is about 11.90 acres. The majority of the project site, about 6.50 acres, is land under water that will be little altered by the project. The remainder of the project site consists of the land area under the bridge spans and the approaches to the bridge both on the Cambridge side and on the Boston side. The approach areas extend far enough back from the bridge abutment and outward on either side of the approach roadway to incorporate any work associated with the project such as sidewalk connections, ramp adjustments, and landscaping. On the Cambridge side the approach extends back about 300 feet to the west from the bridge abutment and the project site occupies about 2.6 acres of land area; on the Boston side the approach extends back about 280 feet to the east towards Charles Circle and the project site occupies about 2.8 acres of land area. The project site has a land area of about 5.40 acres. The majority of the project site is paved roadways and sidewalks with about 1.70 acres on the Cambridge side and about 1.80 acres on the Boston side for a total of about 3.50 acres. The remaining areas of the project site are developed parkland areas of about 1.10 acres on the Boston side and 0.80 acres on the Cambridge side for a total of about 1.90 acres. The paved area within the project site will increase slightly as a result of the project because of sidewalk widening on either side of the Boston approach and at grade sidewalk connections on both the Boston side and the Cambridge side. These new sidewalks add a total of about 3,000 square feet, somewhat less than 0.10 acre, of impervious surface to the existing paved areas. Other altered areas are unpaved areas that will be re-graded for improved lawns and for plantings.

B. Has any part of the project site been in active agricultural use in the last three years?
___ Yes _X_ No; if yes, how many acres of land in agricultural use (with agricultural soils) will be converted to nonagricultural use?

The project area is an urban area of riverfront parklands and arterial roads. There are no agricultural uses in the project area and there have not been any for at least the past three years.

C. Is any part of the project site currently or proposed to be in active forestry use?
___ Yes _X_ No; if yes, please describe current and proposed forestry activities and indicate whether any part of the site is the subject of a DEM-approved forest management plan:

The project area is an urban area of riverfront parklands and arterial roads. There are some urban shade trees in areas at both the Boston end of the bridge and at the Cambridge end of the bridge. There are no forestry uses in the project area and none are planned.

D. Does any part of the project involve conversion of land held for natural resources purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to any purpose not in accordance with Article 97? __ Yes ___X No; if yes, describe:

Areas of public parkland, namely undeveloped sections of the Charles River Reservation on the

Boston side of the bridge, will be occupied by a slightly widened sidewalk and bike lane at the approaches to the bridge. On the north side of the bridge, about 350 square feet of parkland will be used to widen the sidewalk; on the south side of the bridge about 1,200 square feet will be used for the sidewalk improvements. The sidewalk changes will be within the area presently used for pedestrian/vehicular traffic and that use will not be changed. A walkway is consistent with parkland use and does not require Article 97 approval. The Department of Conservation and Recreation will retain ownership of both the bridge and the park.

E. Is any part of the project site currently subject to a conservation restriction, preservation restriction, agricultural preservation restriction or watershed preservation restriction? __ Yes _x__ No; if yes, does the project involve the release or modification of such restriction? __ Yes __x_ No; if yes, describe:

Conservation Restrictions: There are no known conservation restrictions that apply to the project area.

Preservation Restrictions: There are no known preservation restrictions that apply to the project area.

Agricultural Preservation Restrictions: There are no known agricultural preservation restrictions that apply to the project area.

Water Resources Restrictions: There are no known water resources restrictions that apply to the project area.

Zoning Restrictions: The west end of the bridge in Cambridge lies within an "Open Space" district as shown on the map "Zoning Districts, City of Cambridge, Massachusetts", Cambridge Community Development Department, September 17, 2004. The districts just back from the open space along the waterfront are "Office" districts with a "Planned Unit Development" Overlay District. The east end of the bridge in Boston lies within an "Open Space" district as shown on the map "Zoning Districts City of Boston, Map 1 Boston Proper", Zoning Commission of the City of Boston, March 15, 2006. There are no overlay districts in this area. The bridge is a pre-existing use in these zoning districts. The zoning designations for the bridge area do not appear to place any restrictions on the project as planned.

F. Does the project require approval of a new urban redevelopment project or a fundamental change in an existing urban redevelopment project under M.G.L.c.121A? ___ Yes _X_ No; if yes, describe:

The west end of the bridge in Cambridge is near the Kendall Square Urban Renewal Area but does not lie within it. The east end of the bridge in Boston does not lie within an urban redevelopment area. The nearest urban renewal area in Boston is the West End Land Assembly and Redevelopment Plan, Project UR Mass 2-3, most recently modified on February 3, 2005. It is to the northeast of the bridge area.

G. Does the project require approval of a new urban renewal plan or a major modification of an existing urban renewal plan under M.G.L.c.121B? Yes ___ No _X_ ; if yes, describe:

H. Describe the project's stormwater impacts and, if applicable, measures that the project will take to comply with the standards found in DEP's Stormwater Management Policy:

Existing Stormwater Management: Stormwater runoff is currently through deteriorated scuppers on the bridge with discharge into the Charles River. The majority of the scuppers along the bridge deck that are intended to collect stormwater runoff are blocked; the horizontal pipelines between the scuppers are deteriorated. There is extensive leaking through joints and separations in the bridge deck. This leaking is a longstanding issue that has contributed to the deterioration of the bridge deck and of the structural members below.

Applicability of the Stormwater Management Policy: The project is considered a "Redevelopment of a previously developed site" under the "Stormwater Management Policy", Department of Environmental Protection, 2008, in that it involves "Maintenance and improvement of existing roadways, including widening less than a single lane..." For such a project, the requirement of the Stormwater Management Policy is that "Redevelopment of previously developed sites must meet the Stormwater Management Standards to the maximum extent practicable. However, if it is not practicable to meet all the standards, new (retrofitted or expanded) stormwater management systems must be designed to improve existing conditions".

New Stormwater Collection System on the Bridge: It will not be practicable to meet the Stormwater Management Standards but the project will make improvements over the existing stormwater management system. The new bridge deck system will eliminate leaking and the uncontrolled release of stormwater. The destination of collected stormwater from the spans over the river will remain the Charles River. Because of the spatial constraints in the bridge area there is no opportunity for providing sediment removal or pollution removal systems.

Drain Inlets (scuppers) will be located at the low end of each span. Drain Inlets within the roadway will be installed along the curb lines utilizing a bicycle friendly grate. Drain Inlets within the MBTA reservation will be installed directly on the end of the downspout pipe. On the spans over the river where an open drainage system will be used, downspouts will extend a minimum of 12 inches below any adjacent superstructure components. On the first two spans at the Boston and Cambridge approaches to the bridge, a closed system will discharge into the existing storm water systems. Connection to the storm water system will be made at the face of the abutment on the Boston side, and adjacent to the west abutment at the pedestrian underpass on the Cambridge side.

Rehabilitation of the Existing Pumping Station: There is an existing stormwater pumping station for the collection of stormwater from low spots along Memorial Drive. This pumping station is located within the Cambridge Abutment. The pumping station equipment will be replaced. The outlet for the pumping station will remain the Charles River.

I. Is the project site currently being regulated under M.G.L.c.21E or the Massachusetts Contingency Plan? Yes ___ No _X_ ; if yes, what is the Release Tracking Number (RTN)?

Database Search: The project area is an area of riverfront parklands and arterial roads. It is unlikely that petroleum products or hazardous material have been generated in this area. It is possible, however, that roadway related spills of petroleum products or hazardous materials have taken place. A search of the Massachusetts Department of Environmental Protection's database "Waste Site Cleanup Reportable Releases" revealed no documented releases in the project area. The nearest documented release on the Boston side was at Charles Station in 2002; all required remedial response actions were completed for that release. The nearest documented release on the Cambridge side was at the Cambridge Electric Company on First Street in 1997; all required remedial response actions were completed for that release.

Geotechnical Exploration: Geotechnical exploration work done preparatory to the bridge rehabilitation and restoration project has shown instances of fill material contaminated with metals and hydrocarbons. This is typical of fill material in an urban area.

J. If the project is site is within the Chicopee or Nashua watershed, is it within the Quabbin, Ware, or Wachusett subwatershed? ___ Yes _X_ No; if yes, is the project site subject to regulation under the Watershed Protection Act? ___ Yes ___ No

K. Describe the project's other impacts on land:

The areas at the approaches to the bridge on both the Boston side and the Cambridge side will be slightly altered through limited re-grading, sidewalk construction, and plantings.

Approximately 0.80 acres on the Cambridge side of the bridge and approximately 1.10 acres on the Boston side of the bridge will be affected. Sidewalks and steps at the bridge approaches will be repaired to provide continuity from the sidewalks on the bridge to the sidewalks that are a part of the existing street system. The planting program will involve the removal and replacement of some over-aged, inappropriate, or damaged trees, the provision of areas of lawn, and the planting of some shrubs.

On the Boston side of the bridge nine existing trees will be removed, seven of which have a diameter greater than 14 inches. The trees that will be removed fall into the following three categories: (i) "Volunteer" trees that have taken root too close to the bridge structure and have been misshapen by growing in these restricted circumstances (ii) trees growing too close to the bridge structure that may have a negative impact on the structure (iii) trees that are over-mature, overcrowded, or whose symmetry and visual value has been compromised by storm damage or other mishap.

All trees on the Cambridge Approach are in generally good condition, are well placed and spaced, and will be retained.

III. Consistency

A. Identify the current municipal comprehensive land use plan and the open space plan and describe the consistency of the project and its impacts with that plan(s):

Boston Municipal Comprehensive Land Use Plan: There is no comprehensive land use plan for the City of Boston.

Cambridge Municipal Comprehensive Land Use Plan: Guidance for project approval and land use decisions is provided through "Toward a Sustainable Future, Cambridge Growth Policy Document", Cambridge Planning Board and Community Development Department, 1993. The document includes sections on transportation, land use, housing, economic development, and many other topics. The bridge or the bridge area is not specifically mentioned. Policy 22 is "Encourage all reasonable forms of non-automobile travel, including, for example, making improvements to the city's infrastructure which would promote bicycling and walking". The bridge project will make these desired infrastructure improvements.

Boston Open Space Plan: The map "Central Boston Open Space" in "Open Space Plan 2002-2006: Renewing the Legacy...Fulfilling the Vision", Boston Parks and Recreation Department, September 2002, shows the Charles River Reservation running along the east bank of the river both to the south and north sides of the bridge. The open space area to the south is identified as the Charles River Reservation with an area of 14.88 acres; this area is known as the Esplanade. The area to the north of the bridge is identified as the New Charles River Reservation with an area of 2.03 acres; this area is known as Charlesbank Park. These areas are labeled as "Protected Open Space". There is no other open space identified near the project area. The Charles River Reservation is not specifically mentioned in the open space plan. It is noted that "In comparison with the rest of the city, the Central Boston area is underserved in terms of open space available to local residents." There appears to be no inconsistency of the project with the Boston Open Space Plan. The project will improve pedestrian access to the limited open space that is available and a more accessible bridge, with wide sidewalks and frequent overlook areas, will act as a supplement to the limited open space in the area.

Cambridge Open Space Plan: The "City of Cambridge Open Space and Recreation Plan, 2003-2008", July 2005, refers in general terms to the land along the Charles River owned by the Department of Conservation and Recreation. It states "The grassy area and path adjacent to the river attracts people from all over the region to sit and relax, jog, walk, and cycle". The riverfront open space near the bridge is indicated on the "Landscape Character" map and described as "Built as part of a beautification and flood control project in the early decades of the 20th century, the riverfront provides expansive views of Beacon Hill and Back Bay in Boston". Under the "East Cambridge Neighborhood Open Space Recommendations", there are two recommendations that might be applicable to the bridge area. These are:

- "Promote bicycle and pedestrian access to the Charles River. The river is the most important recreational resource to Cambridge residents and is difficult to access because of high traffic volumes on Memorial Drive".
- "The condition of street trees should be evaluated and improved throughout the city".

The project will promote bicycle and pedestrian access through the improvement of all access routes through the project area. The project will include improvements to the street trees at either end of the bridge.

B. Identify the current Regional Policy Plan of the applicable Regional Planning Agency and describe the consistency of the project and its impacts with that plan:

Metropolitan Planning Organization: "Plan 2004, Regional Transportation Plan 2004-2025 of the Boston Region MPO", Central Planning Staff for the Boston Metropolitan Planning Organization, September 11, 2003, states that "Reinvestment in the existing system is the top priority of the Boston Region MPO". It is further explained that "The Boston MPO's emphasis on reinvesting in the region's transportation infrastructure corresponds with the state's "Fix It First" policy, which was established for both highway and transit spending to ensure that current infrastructure is maintained and enhanced to best serve the public". The bridge project is a prime example of making a reinvestment in the existing highway and transit infrastructure. The plan emphasizes that "Chapter 90E, section 2A of the Massachusetts General Laws (Chapter 87, Acts of 1996) requires consideration of bicyclist and pedestrian needs regarding roadways whenever feasible. The intent of this law is to make it as safe as practical for bicyclers and pedestrians". The bridge project improves provisions for both bicycle and pedestrian transportation. The plan mentions the Red Line as "the longest and most heavily utilized rapid transit line in the system". The bridge project will improve the infrastructure of the Red Line system and will maintain service throughout the construction period.

Department of Conservation and Recreation: The "Master Plan for the Charles River Basin, The Second Century", The Metropolitan District Commission, Goody, Clancy & Associates, 2002, provides a review, analysis, and recommendations for facilities along the entire length of the Charles River Basin. The plan refers to the Longfellow Bridge in appropriately glowing terms as "...the most substantial, the most visible, and to many the most handsome of the bridges". The bridge is specifically identified among "Key Project Areas". With regard to existing conditions and issues, the plan states:

- "The connections from the Longfellow Bridge to the river paths on both banks have been broken, making the bridge one of the weakest links in the reservation. Storrow Drive and the Cambridge Viaduct, designed to pass under the bridge, create difficult pedestrian connections along the river".
- "The Longfellow Bridge remains a major bicycle link between Cambridge and Boston despite the lack of a bicycle lane and the condition at the Charles Circle intersection".
- "Some of the worst conflicts between bicycles, pedestrians, and cars occur here."

The three goals for the Longfellow Bridge are:

- "Preserve and maintain the Longfellow Bridge as a major landmark in the Charles River Basin."
- "Improve connections across and along this segment."
- "Enhance the safety and comfort of pedestrians, cyclists, skaters, and joggers crossing the Longfellow Bridge."

The project will meet all these goals.

Among the recommendations for the Longfellow Bridge are:

- "Restore the Longfellow Bridge, including its rails, steps, and towers. Provide architectural lighting of the sculptural buttresses and repeating arches of this landmark bridge."
- "Re-stripe the bicycle lane on the upstream side of the bridge, add a new bicycle lane on the downstream side, and provide designated lanes for bicycles – even though they would be substandard – into Charles Circle."
- "Widen walkways on the upstream side of the bridge by one to two feet and improve drainage."

The project will carry out these recommendations.

Metropolitan Area Planning Council: "MetroPlan 2000, The Regional Development Plan for Metropolitan Boston", Metropolitan Area Planning Council, provides "Objectives" and "Action Recommendations" relative to housing, land resources, transportation, economic development, and water resources in the metropolitan region. Many of the objectives and action items regarding transportation relate to the maintenance of existing facilities and improvements in bicycle and pedestrian transportation. The following are examples of objectives and action recommendations that the project will fulfill:

- "Ensure that all bridges in the ... region are maintained in a safe condition".
- "...improve and increase the use of bicycling and walking as important modes of transportation in the region".
- "Support requirements that all projects be designed to facilitate the use of bicycles, walking, and high occupancy vehicles".
- "Encourage maintenance of the existing transportation system in a safe state throughout the region".
- "Develop and support transportation facilities that promote and encourage walking as a viable mode of transportation by improving existing sidewalks and increasing the availability of pedestrian facilities".
- "Ensure that all pedestrian facilities are improved to meet the requirements of the Americans with Disabilities Act".

C. Will the project require any approvals under the local zoning by-law or ordinance (i.e. text or map amendment, special permit, or variance)? Yes ___ No _X_ ; if yes, describe:

D. Will the project require local site plan or project impact review?
___ Yes _X_ No; if yes, describe:

RARE SPECIES SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **rare species or habitat** (see 301 CMR 11.03(2))? ___ Yes _X_ No; if yes, specify, in quantitative terms:

The project is in an urban area of riverfront parklands and arterial roads. The Massachusetts Natural Heritage and Endangered Species Program Atlas, 12th Edition, and the Certified Vernal Pool

Mapping (Data Layer CVP), Priority Habitat Mapping (Data Layer PHAB), and Wetland Estimated Habitat Mapping (Data Layer WHAB) show no Estimated Habitat of Rare Species, Vernal Pools, Priority Sites of Rare Species, or Exemplary Natural Communities in the project area. The Charles River is a significant warm water fisheries resource.

B. Does the project require any state permits related to **rare species or habitat**? ___ Yes _X_ No

C. If you answered "No" to both questions A and B, proceed to the **Wetlands, Waterways, and Tidelands Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Rare Species section below.

II. Impacts and Permits

A. Does the project site fall within Priority or Estimated Habitat in the current Massachusetts Natural Heritage Atlas (attach relevant page)? ___ Yes ___ No. If yes,

1. Which rare species are known to occur within the Priority or Estimated Habitat (contact: Environmental Review, Natural Heritage and Endangered Species Program, Route 135, Westborough, MA 01581, allowing 30 days for receipt of information):
2. Have you surveyed the site for rare species? ___ Yes ___ No; if yes, please include the results of your survey.
3. If your project is within Estimated Habitat, have you filed a Notice of Intent or received an Order of Conditions for this project? ___ Yes ___ No; if yes, did you send a copy of the Notice of Intent to the Natural Heritage and Endangered Species Program, in accordance with the Wetlands Protection Act regulations? ___ Yes ___ No

B. Will the project "take" an endangered, threatened, and/or species of special concern in accordance with M.G.L. c.131A (see also 321 CMR 10.04)? ___ Yes ___ No; if yes, describe:

C. Will the project alter "significant habitat" as designated by the Massachusetts Division of Fisheries and Wildlife in accordance with M.G.L. c.131A (see also 321 CMR 10.30)? ___ Yes ___ No; if yes, describe:

D. Describe the project's other impacts on rare species including indirect impacts (for example, stormwater runoff into a wetland known to contain rare species or lighting impacts on rare moth habitat):

WETLANDS, WATERWAYS, AND TIDELANDS SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wetlands, waterways, and tidelands** (see 301 CMR 11.03(3))? ___ Yes _X_ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits (or a local Order of Conditions) related to **wetlands, waterways, or tidelands**? _X__ Yes ___ No; if yes, specify which permit:

An Order of Conditions from the Boston Conservation Commission and an Order of Conditions from the Cambridge Conservation Commission will be required related to activities at Land Under Water, to activities at the Bank, and to activities within the 100 foot Buffer Zone of the Bank. There are no permanent alterations proposed to wetland resource areas but there will be construction related activities throughout these areas For example, equipment access and temporary work to allow repairs to be made to the bridge superstructure and the exterior of bridge piers adjacent to the river will be necessary.

C. If you answered "No" to both questions A and B, proceed to the **Water Supply Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wetlands, Waterways, and Tidelands Section below.

II. Wetlands Impacts and Permits

A. Describe any wetland resource areas currently existing on the project site and indicate them on the site plan:

Wetland resources at the project site are Land Under Waterbodies and Waterways, Bank, Bordering Land Subject to Flooding, and Riverfront Area. The Land Under Waterbodies and Waterways is the land under the Charles River. The Bank is the constructed bank on either side of the river in the area of the bridge. The bank on the Cambridge side of the bridge consists of vertical stone retaining walls; the bank on the Boston side of the bridge consists of sloped stone rip rap. The limits of the Bordering Land to Subject to Flooding are approximately coincident with the Bank in the area of the bridge. The Riverfront Area has a width of 25 feet in this designated densely developed area. The Charles River in the bridge area is a warmwater fisheries resource and an anadromous fish run.

B. Estimate the extent and type of impact that the project will have on wetland resources, and indicate whether the impacts are temporary or permanent:

Coastal Wetlands	Area (in square feet) or Length (in linear feet)
Land Under the Ocean	
Designated Port Areas	
Coastal Beaches	
Coastal Dunes	
Barrier Beaches	
Coastal Banks	
Rocky Intertidal Shores	
Salt Marshes	
Land Under Salt Ponds	
Land Containing Shellfish	
Fish Runs	
Land Subject to Coastal Storm Flowage	
Inland Wetlands	
Bank	temporary equipment access
Bordering Vegetated Wetlands	
Land under Water	approximately 2,500 Sq ft (temporary impacts due to construction operations, equipment, and methodologies)
Isolated Land Subject to Flooding	
Bordering Land Subject to Flooding	
Riverfront Area	temporary equipment access, and restoration of disturbed areas

C. Is any part of the project

1. a limited project? _X_ Yes ___ No
2. the construction or alteration of a dam? ___ Yes _X_ No; if yes, describe:
3. fill or structure in a velocity zone or regulatory floodway? ___ Yes _X_ No
4. dredging or disposal of dredged material? ___ Yes _X_ No; if yes, describe the volume of dredged material and the proposed disposal site:
5. a discharge to Outstanding Resource Waters? ___ Yes _X_ No
6. subject to a wetlands restriction order? ___ Yes _X_ No; if yes, identify the area (in square feet):

Limited Project: The Wetlands Protection Act Regulations allow for the consideration of certain projects as a "limited project". The bridge project can be considered a limited project as defined under section 310 CMR 10.53(3)(i) of the Regulations. The Regulations describe such projects as involving "The maintenance, repair, and improvement (but not substantial enlargement) of structures, including...bridges...which existed on the effective date of 310 CMR 10.51 through 10.60 (April 1, 1983)". A limited project may be permitted even though it does not meet the performance standards provided that certain requirements are met.

Wetlands Restriction Orders: Certain wetlands throughout the state have been designated as "restricted" in cooperation with the individual communities. These restricted wetlands are typically outside of urban areas. There are no restricted wetlands in either Cambridge or Boston.

D. Does the project require a new or amended Order of Conditions under the Wetlands Protection Act (M.G.L. c.131A)? X_ Yes ___ No; if yes, has a Notice of Intent been filed or a local Order of Conditions issued? _X__ Yes __ No; if yes, list the date and DEP file number:123-195. Was the Order of Conditions appealed? ___ Yes __X_ No. Will the project require a variance from the Wetlands regulations? ___ Yes __X__ No.

Orders of Conditions in Force: An Order of Conditions from the Boston Conservation Commission and an Order of Conditions from the Cambridge Conservation Commission were issued and are in force for the Geotechnical Exploration Work preparatory to the Bridge Rehabilitation Project. The Order of Conditions from the Boston Conservation Commission is DEP number 006-1056; it was issued on October 31, 2005 and extended in 2008. The Order of Conditions from the Cambridge Conservation Commission is DEP Number 123-195; it was issued on December 8, 2005 and extended in 2008. The Orders of Conditions relate to the entire bridge project area. The geotechnical exploration work is mostly complete. After the work is entirely complete a Request for a Certificate of Compliance will be filed with regard to the Boston Conservation Commission Order of Conditions and a Request for a Certificate of Compliance will be filed with regard to the Cambridge Conservation Commission Order of Conditions.

E. Will the project:
  1. be subject to a local wetlands ordinance or bylaw? ___ Yes _X_ No
  2. alter any federally-protected wetlands not regulated under state or local law?
     ___ Yes _X_ No; if yes, what is the area (in s.f.)?

Local Wetlands Bylaws: Neither the City of Cambridge nor the City of Boston has a wetlands bylaw.

Federally Protected Wetlands: The project is regulated under the U.S. Clean Waters Act. The work is anticipated to be covered under the Massachusetts Programmatic General Permit. The applicability of the Programmatic General Permit is conditional on receiving such other permits and licenses as may apply such as a Section 401 Water Quality Certification, and a Coastal Zone Management Consistency Review.

F. Describe the project's other impacts on wetlands (including new shading of wetland areas or removal of tree canopy from forested wetlands):

Shading: The project does not create any new shading impacts. The area of the bridge over the water will stay exactly the same.

Loss of Canopy: A total of nine trees on the Boston approach to the bridge will be removed. These trees are in the vicinity of the Boston abutment and will not affect any wetlands resource areas All trees on the Cambridge approach to the bridge will be retained.

III. Waterways and Tidelands Impacts and Permits

A. Is any part of the project site waterways or tidelands (including filled former tidelands) that are subject to the Waterways Act, M.G.L.c.91? _X_ Yes ___ No; if yes, is there a current Chapter 91 license or permit affecting the project site? _X__ Yes ___ No; if yes, list the date and number:

There is a Chapter 91 License for the Longfellow Bridge. It is License Number 2373 approved by the Board of Harbor and Land Commissioners on May 25, 1900.

B. Does the project require a new or modified license under M.G.L.c.91? ___ Yes __X__ No; if yes, how many acres of the project site subject to M.G.L.c.91 will be for non-water dependent use?
Current ___ Change ___ Total ___

The bridge is currently a water dependent use as a transportation route across the waterway. The bridge will remain in exactly the same transportation use and in essentially the same configuration as described in the current permit. The intrusion of the structure into the waterway will not change from its current configuration and the navigational clearances will not be altered. The outward relocation of the retaining walls on either side of the Boston approach to the bridge will be required in order to widen the surface available. These small areas of parkland may lie within an historic tideland area of the Charles River and moving the retaining walls outward and expanding the embankment behind them may constitute the filling of an historic tideland area. Chapter 91 authorization is not believed to be required for this activity because the entirety of historic filled tidelands is not considered filled tidelands under regulatory control in an area like the Charles River Basin that is outside a Designated Port Area. The area which is considered filled tidelands for regulatory purposes extends 250 feet from the limit of mean high water. The area of the retaining walls is just beyond this 250 foot distance.

C. Is any part of the project
1. a roadway, bridge, or utility line to or on a barrier beach? ___ Yes __X__ No; if yes, describe:
2. dredging or disposal of dredged material? ___ Yes _X_ No; if yes, volume of dredged material ______
3. a solid fill, pile-supported, or bottom-anchored structure in flowed tidelands or other waterways? ___ Yes _X_ No; if yes, what is the base area? _______
4. within a Designated Port Area? ___ Yes _X__ No

The City of Boston has Designated Port Areas in East Boston and South Boston. The boundaries of the Designated Port Areas do not include the Charles River Basin. The City of Cambridge does not have any Designated Port Areas.

D. Describe the project's other impacts on waterways and tidelands:

There are no other permanent impacts on waterways and tidelands. Both water based and land based construction activities will take place in waterways and tidelands areas.

IV. Consistency:

A. Is the project located within the Coastal Zone? ___ Yes _X_ No; if yes, describe the project's consistency with policies of the Office of Coastal Zone Management:

The project area is not within the defined Coastal Zone as described in the "Boundary Appendix" to 301CMR 21.00 "Coastal Zone Management Federal Consistency Review Regulations" and as shown in "Massachusetts Coastal Zone Plan", Volume II, Chapter 5 "Coastal Regions and Atlas of Resources", Executive Office of Environmental Affairs, 1977. The regulations state that "Anadromous fish runs are included, as well as their floodplains, to the fresh water breeding area, if such area is within a coastal town". It is thought that the fresh water breeding areas for the Charles River are inland from Boston and therefore not within a coastal town. This implies that the floodplain of the Charles River is not within the Coastal Zone. The fact that the Charles River is an anadromous fish run makes activities along the Charles River, such as the bridge project, matters of interest to the Office of Coastal Zone Management even though the project area does not lie within the Coastal Zone.

B. Is the project located within an area subject to a Municipal Harbor Plan? ___ Yes _X__ No; if yes, identify the Municipal Harbor Plan and describe the project's consistency with that plan:

> The City of Boston has Municipal Harbor Plans that encompass several areas of the city. The boundaries of the Municipal Harbor Plan Areas do not include the Charles River Basin. The City of Cambridge does not have a Municipal Harbor Plan.

WATER SUPPLY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **water supply** (see 301 CMR 11.03(4))? ___ Yes _X_ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **water supply**? ___ Yes _X_ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Wastewater Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Water Supply Section below.

II. Impacts and Permits

A. Describe, in gallons/day, the volume and source of water use for existing and proposed activities at the project site:

	Existing	Change	Total
Withdrawal from groundwater	________	________	________
Withdrawal from surface water	________	________	________
Interbasin transfer	________	________	________
Municipal or regional water supply	________	________	________

B. If the source is a municipal or regional supply, has the municipality or region indicated that there is adequate capacity in the system to accommodate the project? ___ Yes ___ No

C. If the project involves a new or expanded withdrawal from a groundwater or surface water source,

1. have you submitted a permit application? ___ Yes ___ No; if yes, attach the application
2. have you conducted a pump test? ___ Yes ___ No; if yes, attach the pump test report

D. What is the currently permitted withdrawal at the proposed water supply source (in gallons/day)? ______Will the project require an increase in that withdrawal?___ Yes ___ No

E. Does the project site currently contain a water supply well, a drinking water treatment facility, water main, or other water supply facility, or will the project involve construction of a new facility? ___ Yes ___ No. If yes, describe existing and proposed water supply facilities at the project site:

	Existing	Change	Total
Water supply well(s) (capacity, in gpd)	________	________	________
Drinking water treatment plant (capacity, in gpd)	________	________	________
Water mains (length, in miles)	________	________	________

F. If the project involves any interbasin transfer of water, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or proposed?

G. Does the project involve

1. new water service by a state agency to a municipality or water district? ___ Yes ___ No
2. a Watershed Protection Act variance? ___ Yes ___ No; if yes, how many acres of alteration?
3. a non-bridged stream crossing 1,000 or less feet upstream of a public surface drinking water supply for purpose of forest harvesting activities? ___ Yes ___ No

H. Describe the project's other impacts (including indirect impacts) on water resources, quality, facilities and services:

III. Consistency -- Describe the project's consistency with water conservation plans or other plans to enhance water resources, quality, facilities and services:

WASTEWATER SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wastewater** (see 301 CMR 11.03(5))? ___ Yes _X_ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **wastewater**? ___ Yes _X_ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Transportation -- Traffic Generation Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wastewater Section below.

II. Impacts and Permits

A. Describe, in gallons/day, the volume and disposal of wastewater generation for existing and proposed activities at the project site (calculate according to 310 CMR 15.00):

	Existing	Change	Total
Discharge to groundwater (Title 5)	________	________	________
Discharge to groundwater (non-Title 5)	________	________	________
Discharge to outstanding resource water	________	________	________
Discharge to surface water	________	________	________
Municipal or regional wastewater facility	________	________	________
TOTAL	________	________	________

B. Is there sufficient capacity in the existing collection system to accommodate the project? ___ Yes ___ No; if no, describe where capacity will be found:

C. Is there sufficient existing capacity at the proposed wastewater disposal facility?___ Yes ___ No; if no, describe how capacity will be increased:

D. Does the project site currently contain a wastewater treatment facility, sewer main, or other wastewater disposal facility, or will the project involve construction of a new facility? ___ Yes ___ No. If yes, describe as follows:

	Existing	Change	Total
Wastewater treatment plant (capacity, in gpd)	________	________	________
Sewer mains (length, in miles)	________	________	________
Title 5 systems (capacity, in gpd)	________	________	________

E. If the project involves any interbasin transfer of wastewater, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or proposed?

F. Does the project involve new sewer service by an Agency of the Commonwealth to a municipality or sewer district? ___ Yes ___ No

G. Is there any current or proposed facility at the project site for the storage, treatment, processing, combustion or disposal of sewage sludge, sludge ash, grit, screenings, or other sewage residual materials? ___ Yes ___ No; if yes, what is the capacity (in tons per day):

	Existing	Change	Total
Storage	___	___	___
Treatment, processing	___	___	___
Combustion	___	___	___
Disposal	___	___	___

H. Describe the project's other impacts (including indirect impacts) on wastewater generation and treatment facilities:

III. Consistency -- Describe measures that the proponent will take to comply with federal, state, regional, and local plans and policies related to wastewater management:

A. If the project requires a sewer extension permit, is that extension included in a comprehensive wastewater management plan? ___ Yes ___ No; if yes, indicate the EOEA number for the plan and describe the relationship of the project to the plan

TRANSPORTATION -- TRAFFIC GENERATION SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **traffic generation** (see 301 CMR 11.03(6))? ___ Yes _X_ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **state-controlled roadways**? ___ Yes _X_ No; if yes, specify which permit:

The project does not generate any new traffic in the area or create any parking spaces. It will cause temporary changes in traffic flow patterns including a detour during the four year period of construction. The MBTA Red Line will remain open during construction. No thresholds will be exceeded and no state level permits will be required. The general intent of these permit programs is to provide for continued access through the area, timely notifications to abutters, and the provision of appropriate police details. These regulatory programs will be referred to for guidance. The construction specifications for the project will address the issues relating to traffic management in conformance with all regulatory requirements.

C. If you answered "No" to both questions A and B, proceed to the **Roadways and Other Transportation Facilities Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Traffic Generation Section below.

II. Traffic Impacts and Permits

A. Describe existing and proposed vehicular traffic generated by activities at the project site:

	Existing	Change	Total
Number of parking spaces	___	___	___
Number of vehicle trips per day	___	___	___
ITE Land Use Code(s):			

B. What is the estimated average daily traffic on roadways serving the site?

	Roadway	Existing	Change	Total
1.				
2.				
3.				

C. Describe how the project will affect transit, pedestrian and bicycle transportation facilities and services:

III. Consistency -- Describe measures that the proponent will take to comply with municipal, regional, state, and federal plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services:

ROADWAYS AND OTHER TRANSPORTATION FACILITIES SECTION

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **roadways or other transportation facilities** (see 301 CMR 11.03(6))? __X_ Yes __ No; if yes, specify, in quantitative terms:

On the Boston side of the bridge nine existing trees will be removed, seven of which have a diameter greater than 14 inches. The trees that will be removed fall into the following three categories: (i) "Volunteer" trees that have taken root too close to the bridge structure and have been misshapen by growing in these restricted circumstances; (ii) trees growing too close to the bridge structure that may have a negative impact on the structure; (iii) trees that are over-mature, overcrowded or whose symmetry and visual value has been compromised by storm damage or other mishap.

All trees on the Cambridge Approach are in generally good condition, are well placed and spaced, and will be retained.

B. Does the project require any state permits related to **roadways or other transportation facilities**? ___ Yes _X_ No; if yes, specify which permit:

The project clearly involves a roadway facility but it will create no greater roadway capacity than already exists and it will not create any roadway connections beyond those that already exist. The challenge of the project is to rehabilitate and restore an existing transportation facility in nearly exactly the same configuration. No thresholds will be exceeded and no state level permits will be required.

C. If you answered "No" to both questions A and B, proceed to the **Energy Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Roadways Section below.

II. Transportation Facility Impacts

A. Describe existing and proposed transportation facilities at the project site:

	Existing	Change	Total
Length (in linear feet) of new or widened roadway	2400	0	2400
Width (in feet) of new or widened roadway	105	0	105

* as previously mentioned widening by a maximum of 5 feet will occur from span 1 to Charles Circle on

the inbound Boston approach.
Other transportation facilities:

B. Will the project involve any
   1. Alteration of bank or terrain (in linear feet)? ______ 0___
   2. Cutting of living public shade trees (number)? ______9___
   3. Elimination of stone wall (in linear feet)? ______0___

III. Consistency -- Describe the project's consistency with other federal, state, regional, and local plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services, including consistency with the applicable regional transportation plan and the Transportation Improvements Plan (TIP), the State Bicycle Plan, and the State Pedestrian Plan:

The project is consistent with federal, state, regional, and local plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services. The number of travel lanes will remain unchanged and the width of these lanes will more closely conform to MassHighway standards. MBTA service will be maintained during construction and will be unchanged after completion of the work. Bicycle lane widths will be increased to conform to MassHighway criteria. Sidewalks will be added at the Boston approach to make the bridge compliant with the Americans with Disabilities Act, and the existing narrow sidewalk on the upstream side of the bridge will be widened.

ENERGY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **energy** (see 301 CMR 11.03(7))?
___ Yes _X_ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **energy**? ___ Yes _X_ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Air Quality Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Energy Section below.

II. Impacts and Permits

A. Describe existing and proposed energy generation and transmission facilities at the project site:

	Existing	Change	Total
Capacity of electric generating facility (megawatts)			
Length of fuel line (in miles)			
Length of transmission lines (in miles)			
Capacity of transmission lines (in kilovolts)			

B. If the project involves construction or expansion of an electric generating facility, what are
   1. the facility's current and proposed fuel source(s)?
   2. the facility's current and proposed cooling source(s)?

C. If the project involves construction of an electrical transmission line, will it be located on a new, unused, or abandoned right of way?___ Yes ___ No; if yes, please describe:

D. Describe the project's other impacts on energy facilities and services:

III. Consistency -- Describe the project's consistency with state, municipal, regional, and federal plans and policies for enhancing energy facilities and services:

AIR QUALITY SECTION

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **air quality** (see 301 CMR 11.03(8))? ___ Yes _X_ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **air quality**? ___ Yes _X_ No; if yes, specify which permit:

The project will have the potential to cause local air quality impacts but no thresholds will be exceeded and no state level permits will be required. Dust generation from demolition and general construction activities, removal of deteriorated lead based paint from structural steel members that are to be restored in place, and the cutting, welding, coating, and painting of structural steel members that are to be restored in place are all associated with the project. These activities have the potential to create local air quality impacts. The best management practices of the construction industry will be used to control these potential impacts. For example, roads will be regularly watered and cleaned to mitigate dust generation, and removal of lead based paint will be performed within temporary enclosures around the work area. The City of Boston has "Regulations for the Control of Atmospheric Pollution" that include regulations and a permit program relating to "Abrasive Blasting". The City of Cambridge has a regulation related to sand blasting. These regulatory programs will be referred to for guidance. The construction specifications for the project will address the control of local air quality impacts in conformance with all regulatory requirements.

C. If you answered "No" to both questions A and B, proceed to the **Solid and Hazardous Waste Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Air Quality Section below.

II. Impacts and Permits

A. Does the project involve construction or modification of a major stationary source (see 310 CMR 7.00, Appendix A)?___ Yes ___ No; if yes, describe existing and proposed emissions (in tons per day) of:

	Existing	Change	Total
Particulate matter			
Carbon monoxide			
Sulfur dioxide			
Volatile organic compounds			
Oxides of nitrogen			
Lead			
Any hazardous air pollutant			
Carbon dioxide			

B. Describe the project's other impacts on air resources and air quality, including noise impacts:

III. Consistency

A. Describe the project's consistency with the State Implementation Plan:

B. Describe measures that the proponent will take to comply with other federal, state, regional, and local plans and policies related to air resources and air quality:

SOLID AND HAZARDOUS WASTE SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **solid or hazardous waste** (see 301 CMR 11.03(9))? ___ Yes _X_ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **solid and hazardous waste**? ___ Yes _X_ No; if yes, specify which permit:

The generation of solid and hazardous waste will be associated with the project but no thresholds will be exceeded and no state level permits will be required. Demolition rubble and construction related debris will be produced. The majority of this material will be concrete rubble and other pavement rubble. These are not hazardous wastes. There are small volumes of hazardous waste that are likely to be generated by demolition and removal. Some of the existing conduits which run in duct banks along the bridge may be transite conduits which are asbestos containing. Some of the pipe wrapping or pipe insulation associated with existing utilities along the bridge may be asbestos containing material. Miscellaneous waterproofing materials may be asbestos containing. The pumps in the stormwater pumping station at the Cambridge Abutment may have components and gaskets made of asbestos containing materials. The ballast under the Red Line tracks has likely become contaminated with various hydrocarbons and metals. The wood ties along the Red Line tracks are pressure treated material that often contains arsenic and cadmium. The various signal and power system components along the Red Line Right of Way may contain components made of asbestos containing materials, lead encasements, and lubricating oils and greases. The in place restoration of existing structural members will generate an abrasive blasting residue containing lead based paint. Testing of existing materials will take place as part of the continuing project development process. The construction specifications for the project will address the issue of appropriate management and disposal of these materials in conformance with all regulatory requirements.

C. If you answered "No" to both questions A and B, proceed to the **Historical and Archaeological Resources Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Solid and Hazardous Waste Section below.

II. Impacts and Permits

A. Is there any current or proposed facility at the project site for the storage, treatment, processing, combustion or disposal of solid waste? ___ Yes ___ No; if yes, what is the volume (in tons per day) of the capacity:

	Existing	Change	Total
Storage			
Treatment, processing			
Combustion			
Disposal			

B. Is there any current or proposed facility at the project site for the storage, recycling, treatment or disposal of hazardous waste? ___ Yes ___ No; if yes, what is the volume (in tons or gallons per day) of the capacity:

	Existing	Change	Total
Storage			
Recycling			
Treatment			
Disposal			

C. If the project will generate solid waste (for example, during demolition or construction), describe alternatives considered for re-use, recycling, and disposal:

The project will generate demolition rubble and construction related debris. The majority of the material generated will be concrete rubble from the demolished concrete deck and structural steel members that cannot be used for bridge rehabilitation. Some steel members will not be reused because of their extent of damage or deterioration or because they are historically inappropriate members introduced during the repair program in 1959. Concrete rubble is unlikely to have any re-use value. The steel members that cannot be reused for bridge rehabilitation will be available for recycling. The original steel members which cannot be reused because of extensive damage or deterioration date back about a hundred years; the steel members that were used for past repairs and are inappropriate for historic rehabilitation purposes date back about fifty years. The underwater areas around the bridge contain structural steel members which were disposed of during the course of previous bridge repair work and will be of various ages and levels of deterioration. Despite the age and condition of all these members and the difference in the composition of the steel used from the structural steel used today, the steel is still considered salvageable. The construction specifications will address the issue of appropriate management of these materials in conformance with all regulatory requirements.

D. If the project involves demolition, do any buildings to be demolished contain asbestos?
_X_ Yes ___ No

There are small volumes of asbestos containing material that are likely to be generated by demolition and removal. Some of the existing conduits which run in duct banks along the bridge may be transite conduits which are asbestos containing. Some of the pipe wrapping or pipe insulation associated with existing utilities along the bridge maybe asbestos containing material. Miscellaneous waterproofing materials may be asbestos containing. The pumps in the stormwater pumping station at the Cambridge Abutment may have components and gaskets made of asbestos containing materials. The various signal and power system components along the Red Line may contain components made of asbestos containing materials. Testing of existing materials will take place as part of the continuing project development process. The construction specifications for the project will address the issue of appropriate management and disposal of these materials in conformance with all regulatory requirements.

E. Describe the project's other solid and hazardous waste impacts (including indirect impacts):

III. Consistency--Describe measures that the proponent will take to comply with the State Solid Waste Master Plan:

Materials generated during construction will be handled in accordance with Massachusetts Department of Environmental Protection, 310 CMR 40.0000, Massachusetts Contingency Plan. Characterization and classification of these materials for off-site disposal or treatment will be performed according to criteria established by the identified receiving facilities' permits, DEP, and/or appropriate out-of-state or federal regulating authority.

HISTORICAL AND ARCHAEOLOGICAL RESOURCES SECTION

I. Thresholds / Impacts

A. Is any part of the project site a historic structure, or a structure within a historic district, in either case listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? _X_ Yes ___ No; if yes, does the project involve the demolition of all or any exterior part of such historic structure? __X_ Yes __ No; if yes, please describe:

The Longfellow Bridge is a contributing element in the State Register-listed Charles River Basin Historic District. The bridge and the district are each listed in the Inventory of Historic and Archaeological Assets of the Commonwealth, with Resource Numbers BOS.9034/CAM.912, and BOS.CA/CAM.AJ, respectively.

Although numerous deteriorated elements of the existing bridge will be removed/replaced as part of this project, all of the elements deemed critical to the bridge's historic/architectural character will be treated in accordance with the Secretary of the Interior's Standards for Restoration, while elements of lesser or no historic/architectural significance will be treated in accordance with the Secretary of the Interior's Standards for Rehabilitation. MassHighway and the Department of Conservation and Recreation are committed to restore or replicate the existing deck configuration with buckle plate, stringer, floor beam and reinforced deck in spans 1,2,11 (Storrow Drive East/West, and Mem. Drive East). At the completion of this project, the restored/rehabilitated bridge will look very much as it did when it first opened to traffic in 1907, and it will be renewed in its role as an iconic element of the Charles River Basin Historic District.

B. Is any part of the project site an archaeological site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? ___ Yes _X_ No; if yes, does the project involve the destruction of all or any part of such archaeological site? ___ Yes _X_ No; if yes, please describe:

There are no State Register-listed or inventoried archaeological sites in the project site.

An archaeological assessment of the project area, performed for the project proponents and accepted by the Massachusetts State Archaeologist, concluded that "Given the original shoreline locations well inland of both the Cambridge and Boston sides of the modern Longfellow Bridge approaches, the river channel dredging, and the severity of twentieth-century reconfigurations of the bridge approaches/highway/rapid transit infrastructure, it is not expected that any significant archaeological resources are present anywhere within at least a 500 ft radius of the Longfellow Bridge substructure."

C. If you answered "No" to all parts of both questions A and B, proceed to the **Attachments and Certifications** Sections. If you answered "Yes" to any part of either question A or question B, fill out the remainder of the Historical and Archaeological Resources Section below.

D. Have you consulted with the Massachusetts Historical Commission? _X_ Yes ___ No; if yes, attach correspondence

The Massachusetts Historical Commission (in its role as the office of the Massachusetts State Historic Preservation Officer) has been, and continues to be, actively involved in the review of this project as a Consulting Party under Section 106 of the National Historic Preservation Act. [The other Section 106 Consulting Parties are: the Federal Highway Administration; the Boston Landmarks Commission; the Cambridge Historical Commission; and the project proponents – the Massachusetts Highway Department and the Massachusetts Department of Conservation and Recreation.]

MHC (and each of the other Consulting Parties) reviewed the Preliminary Field Investigations phase of this project in early 2006; MHC concurred with a Section 106 finding of No Adverse Effect for this phase on 4/10/06 (copies of MassHighway, FHWA, and MHC letters of 1/3/06, 1/24/06, 2/24/06, and 3/9/06 attached).

MHC (and each of the other Consulting Parties) received a copy of the archaeological assessment report for the project area in January of 2006 (copy of MassHighway's transmittal letter of 1/06/06 attached). MHC's acceptance of the report's conclusions is implicit in MHC's concurrence with the No Adverse Effect finding for the Preliminary Field Investigations, noted above.

MHC (and each of the other Consulting Parties) received a copy of an Historical Identification and Assessment Report, containing a history of the bridge, an analysis of the changes made to the structure and its surroundings over time, and a listing of other known historic resources within or near the project area, in May of 2006 (copy of MassHighway transmittal letter of 5/17/06 attached).

A formal Section 106 consultation meeting, with representatives of each of the consulting parties (including MHC) in attendance, was held on 5/17/06. The development of the project to that point was presented, and the comments and concerns of the consulting parties were solicited and discussed. The discussion was open, extensive, and generally supportive of the direction being taken by the project proponents. A second Section 106 consultation meeting, with all consulting parties represented, was held on 7/29/08 to review the draft ENF and the project proponents' further commitments to preservation goals. Further meetings with the consulting parties are anticipated as the design process advances.

E. Describe and assess the project's other impacts, direct and indirect, on listed or inventoried historical and archaeological resources:

The Longfellow Bridge is visible from a large number of State Register-listed and/or inventoried properties on either side of the Charles River Basin in Cambridge or Boston. Among the closest and most prominent of the State Register-listed properties are: the Beacon Hill Historic District; the Back Bay Historic District; the Massachusetts Institute of Technology Historic District; the Massachusetts General Hospital - Bulfinch Building; the (separately listed) Massachusetts General Hospital – Ether Dome; and the Suffolk County Jail. Among the closest and most prominent of the unlisted but inventoried properties are the Charles/MGH Station; and the Kendall Incline and Kendall Subway Portal (both inventoried as part of the Kendall Square Subway Station).

None of these State Register-listed and/or inventoried properties will be directly impacted by the proposed project. The project's visual impacts on these properties will be minimal and, quite probably, positive as the project will restore the bridge to its original architectural grandeur.

II. **Consistency** -- Describe measures that the proponent will take to comply with federal, state, regional, and local plans and policies related to preserving historical and archaeological resources:

The major goals of the project are to restore those critical features that give the Longfellow Bridge its iconic historic/architectural character, while rehabilitating its structural system and adjusting its deck so that the restored bridge may safely carry vehicles, pedestrians, cyclists, and MBTA trains well into the future.

The project goals are entirely compatible with those expressed for the Longfellow Bridge in the Metropolitan District Commission's Master Plan for the Charles River Basin: The Second Century, where the goals for the bridge are stated as:

- Preserve and maintain the Longfellow Bridge as a major landmark in the Charles River Basin.
- Improve connections across and along this segment.
- Enhance the safety and comfort of pedestrians, cyclists, skaters, and joggers crossing the Longfellow Bridge.

The project goals are equally compatible with those detailed by the Massachusetts Historical Commission in their Massachusetts State Historic Preservation Plan, 2006-2010, most specifically Goal 3 – "Protecting Historic & Archaeological Resources through State & Federal Regulations." MassHighway and DCR's continuing consultation with the MHC and the other consulting parties under the Section 106 review process will ensure that the historic preservation goals for the Longfellow Bridge project are achieved.

ATTACHMENTS:

1. Plan, at an appropriate scale, of existing conditions of the project site and its immediate context, showing all known structures, roadways and parking lots, rail rights-of-way, wetlands and water bodies, wooded areas, farmland, steep slopes, public open spaces, and major utilities.
2. Plan of proposed conditions upon completion of project (if construction of the project is proposed to be phased, there should be a site plan showing conditions upon the completion

of each phase).

3. **Original** U.S.G.S. map or good quality **color** copy (8-½ x 11 inches or larger) indicating the project location and boundaries
4 List of all agencies and persons to whom the proponent circulated the ENF, in accordance with 301 CMR 11.16(2).
5. Other: **Bridge Inspection Timeline**
6. Other: **Architecture and Historic Preservation**
7. Other: **Traffic Analysis**
8. Other: **Alternatives**

CERTIFICATIONS:

1. The Public Notice of Environmental Review has been/will be published in the following newspapers in accordance with 301 CMR 11.15(1):

(Name)	(Date)
Boston Globe	3.20.09
Boston Herald	3-20-09
Cambridge Chronicle	3-26-09

2. This form has been circulated to Agencies and Persons in accordance with 301 CMR 11.16(2).

6/23/08

Date Commissioner
MassHighway

3/13/09

Date Commissioner
Department of Conservation and Recreation

3/16/09 Kevin M. Walsh

Date Signature of Responsible Officer
or Proponent

3/16/09 Jessica Kenny

Date Signature of person preparing
ENF

Name (print or type) Kevin Walsh

Firm/Agency MassHighway

Street 10 Park Plaza, Room 4260

Municipality/State/Zip Boston, MA 02116

Phone (617) 973-7484

Name (print or type) Jessica Kenny

Firm/Agency MassHighway.

Street 10 Park Plaza, Room 4260

Municipality/State/Zip Boston, MA 02116

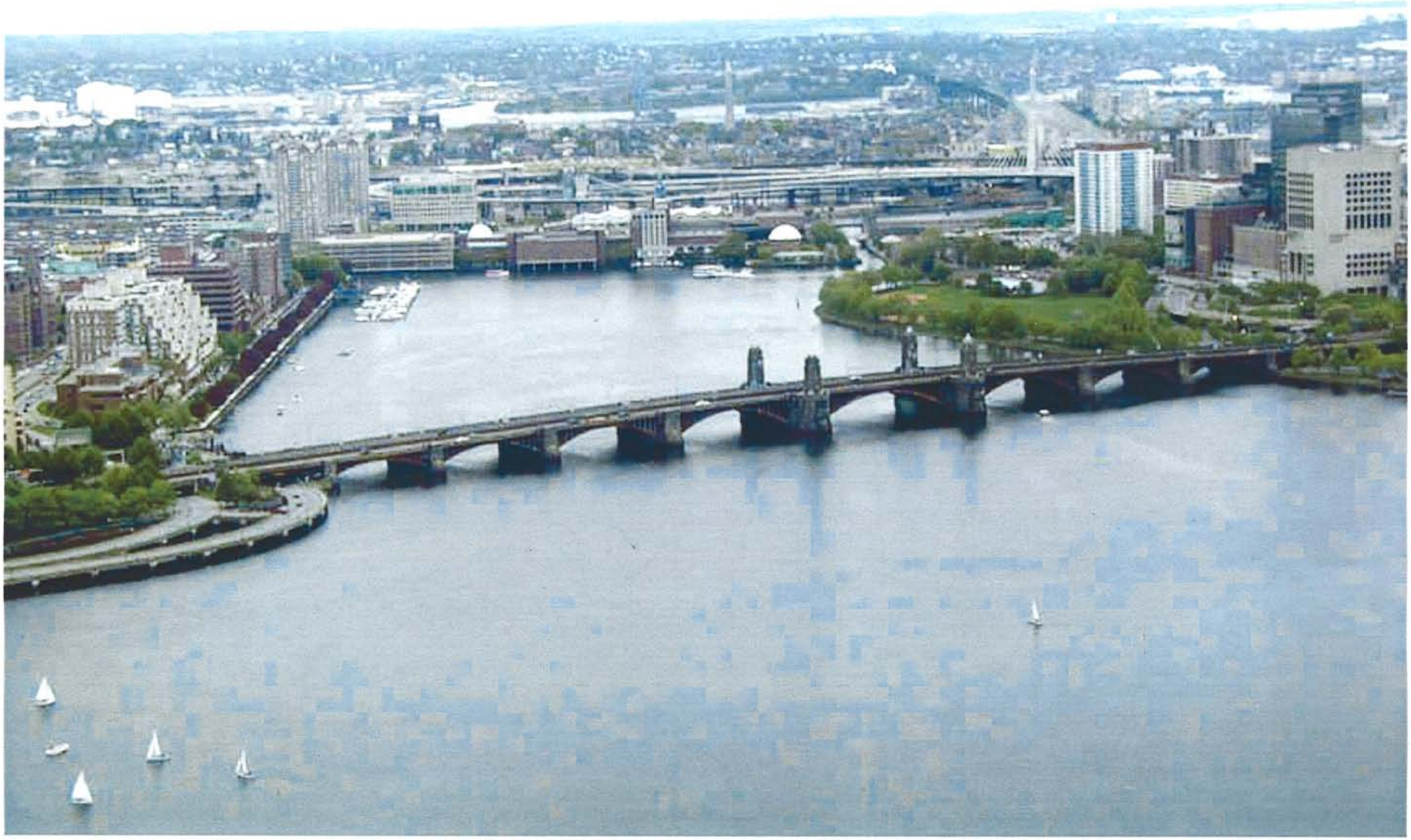
Phone (508)929-3703

Attachment 1

Existing Conditions Plans and Photographs

- **Photograph of Entire Bridge Span:** This 8½ by 11 aerial photo shows the entire length of the bridge from the Cambridge shore on the left to the Boston shore on the right. The view is looking north with the Charles River Dam in the background.
- **Photograph of the Center Span and the Center Pier Masonry Towers:** This 8½ by 11 photograph shows the Center Span and the four Center Pier Masonry Towers. Note the decorative elements on the face of the Center Piers. These four towers will be dismantled and reconstructed. This view is towards the south with the Harvard Bridge in the background.
- **Photograph of an Abutment Tower:** This 8½ by 11 photograph shows a typical abutment tower. This happens to be the north side tower on the Cambridge side. The four abutment towers will be rehabilitated in place.
- **Photograph of the Bridge Superstructure from the Water Level:** This 8½ by 11 photograph shows the bridge superstructure looking up from below. The unique light and transparent nature of the structural system is in evidence. Each of the arched ribs, posts, and braces - thousands of individual structural members in all - will be either restored or replaced.
- **Photograph of Typical Latticework Structural Members:** This 8½ by 11 photograph gives a closer look at the latticework structural members. Each latticework member is made up of small steel components riveted together.
- **Photograph of Outside Railing:** This 8½ by 11 photograph shows the pedestrian railing that runs along the entire length of both sides of the bridge. This highly decorative original railing will be removed, restored off site, and put back in place.
- **Photograph of MBTA Right of Way Railing:** This 8½ by 11 photograph shows the railing that runs along both sides of the MBTA Right of Way over the entire length of the bridge. This original railing will be removed and replaced with a reproduction railing.
- **Photograph of Curb Between Roadway and Sidewalk:** This 8½ by 11 photograph shows the concrete curb that separates the roadway and the sidewalk. This curb will be replaced with a more protective low railing that draws on existing bridge elements for its design.
- **Photograph of Roadway Light Standard:** This 8½ by 11 photograph shows the roadway light standard and fixture. This light standard and fixture will be replaced with a new system that draws on existing bridge elements for its design.

- **Photograph of Constricted Area Next to the Charles Station Passenger Platform:** This 8½ by 11 photograph shows where the increase in width of the Red Line Right of Way to allow for the extended Charles Station passenger platforms eliminated some of the bridge width that was previously available for other transportation functions. This view shows the eastbound lanes as they approach Charles Circle on the Boston side of the bridge. A widening of one of the bridge spans is necessary to provide acceptable widths through this area.
- **Existing Typical Bridge Cross Section:** This 11 by 17 drawing shows the existing cross section of the bridge with the widths provided for the various transportation functions. The section is cut towards the center of the bridge looking in the direction of Cambridge.
- **Existing Site Plans - Cambridge Side, Charles River, and Boston Side:** These three 11 by 17 drawing shows the major features in the project area including Wetland Resource Areas.
- **Detailed Existing Conditions Plans for the Boston Approach:** These two 11 by 17 drawings shows the details of the existing roadway configuration at the Boston side of the bridge.
- **Detailed Existing Conditions Plan for the Cambridge Approach:** This 11 by 17 drawing shows the details of the existing roadway configuration at the Cambridge side of the bridge.



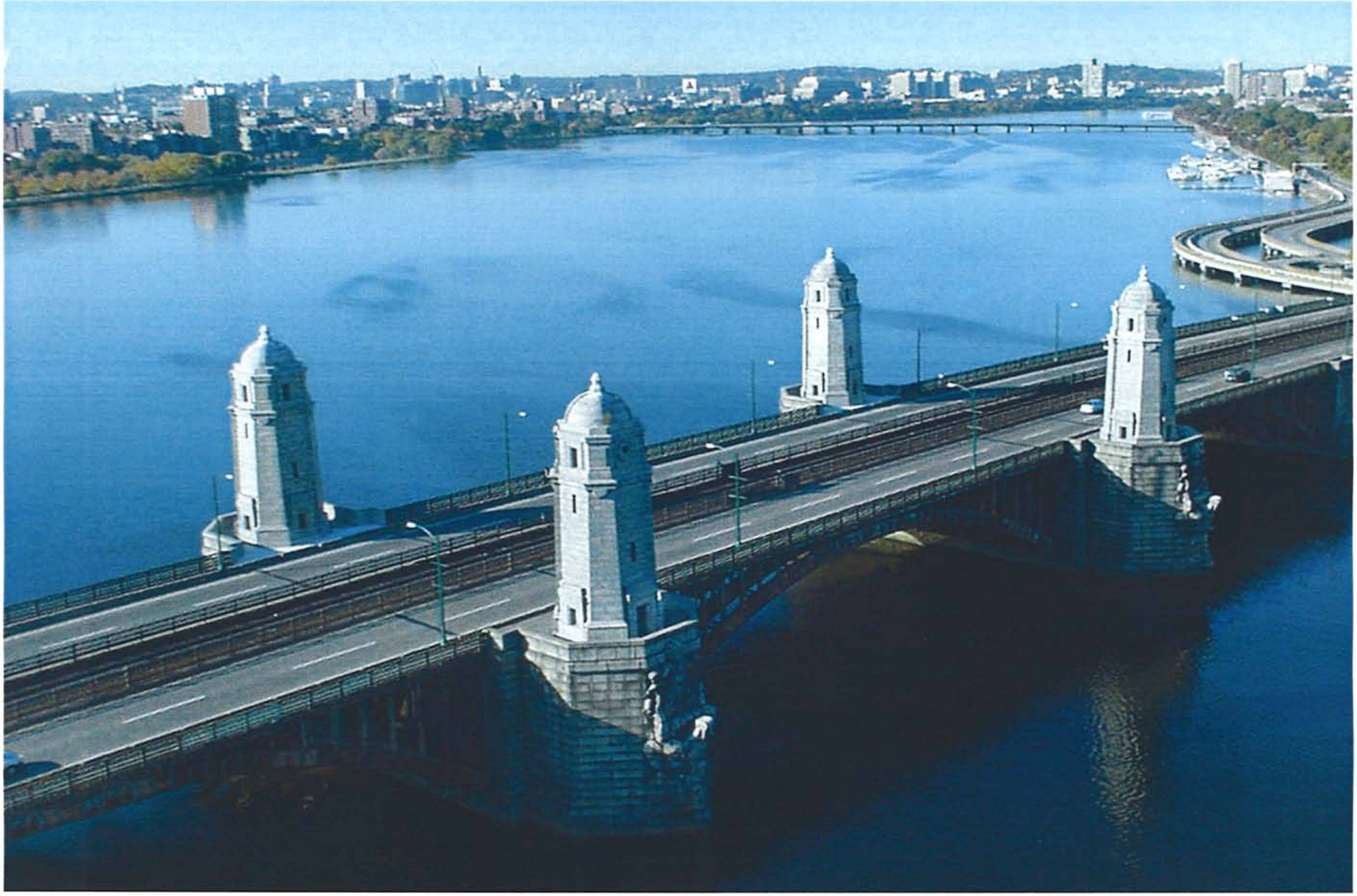
Rehabilitation and Restoration
of the Longfellow Bridge

Environmental Notification Form

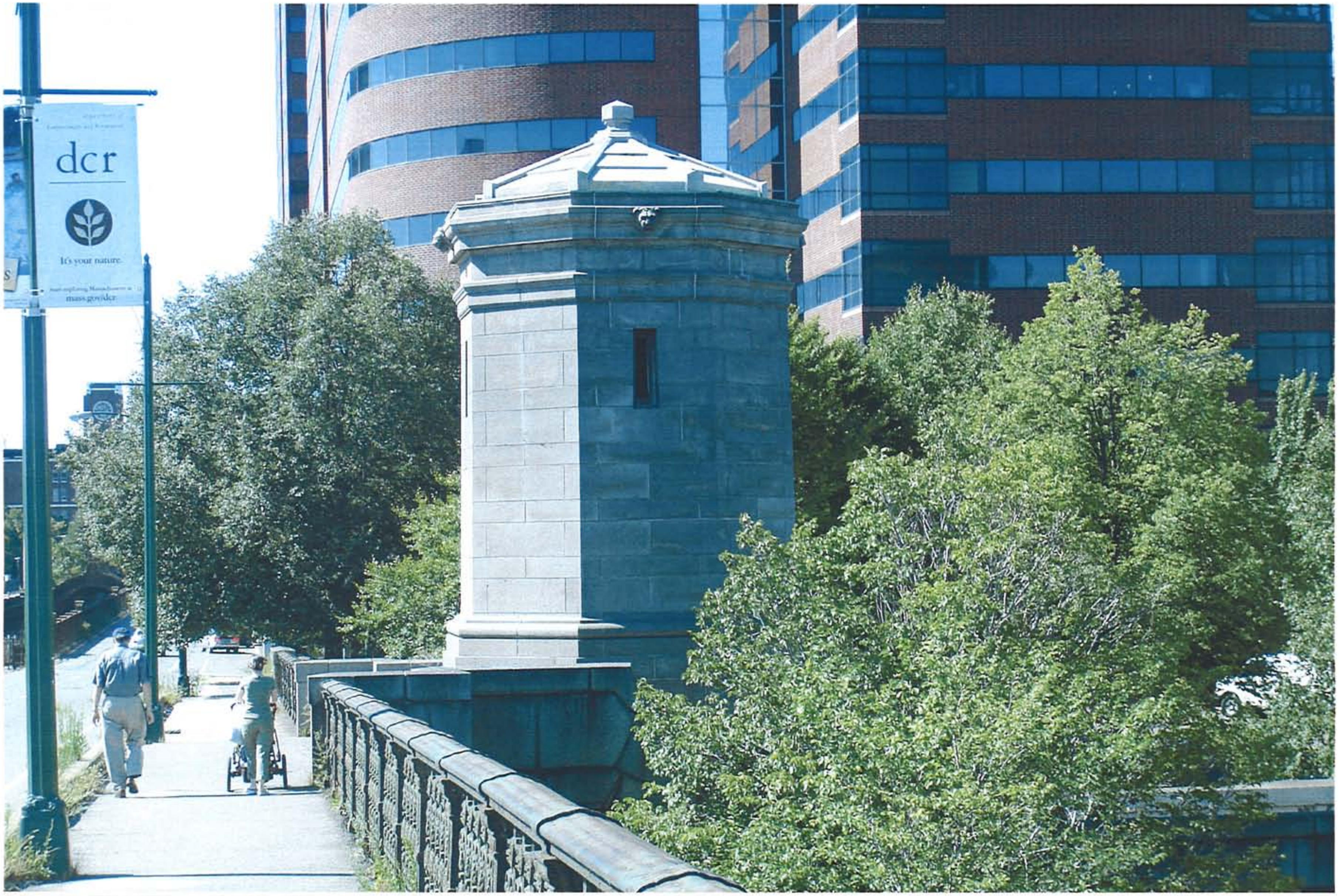
Entire Bridge Span

September 2006

Attachment 1



MASS HIGHWAY dcr	JE JACOBS	Rehabilitation and Restoration of the Longfellow Bridge	Center Span and the Center Pier Masonry Towers	September 2006
		Environmental Notification Form		Attachment 1



MASS HIGHWAY

JACOBS

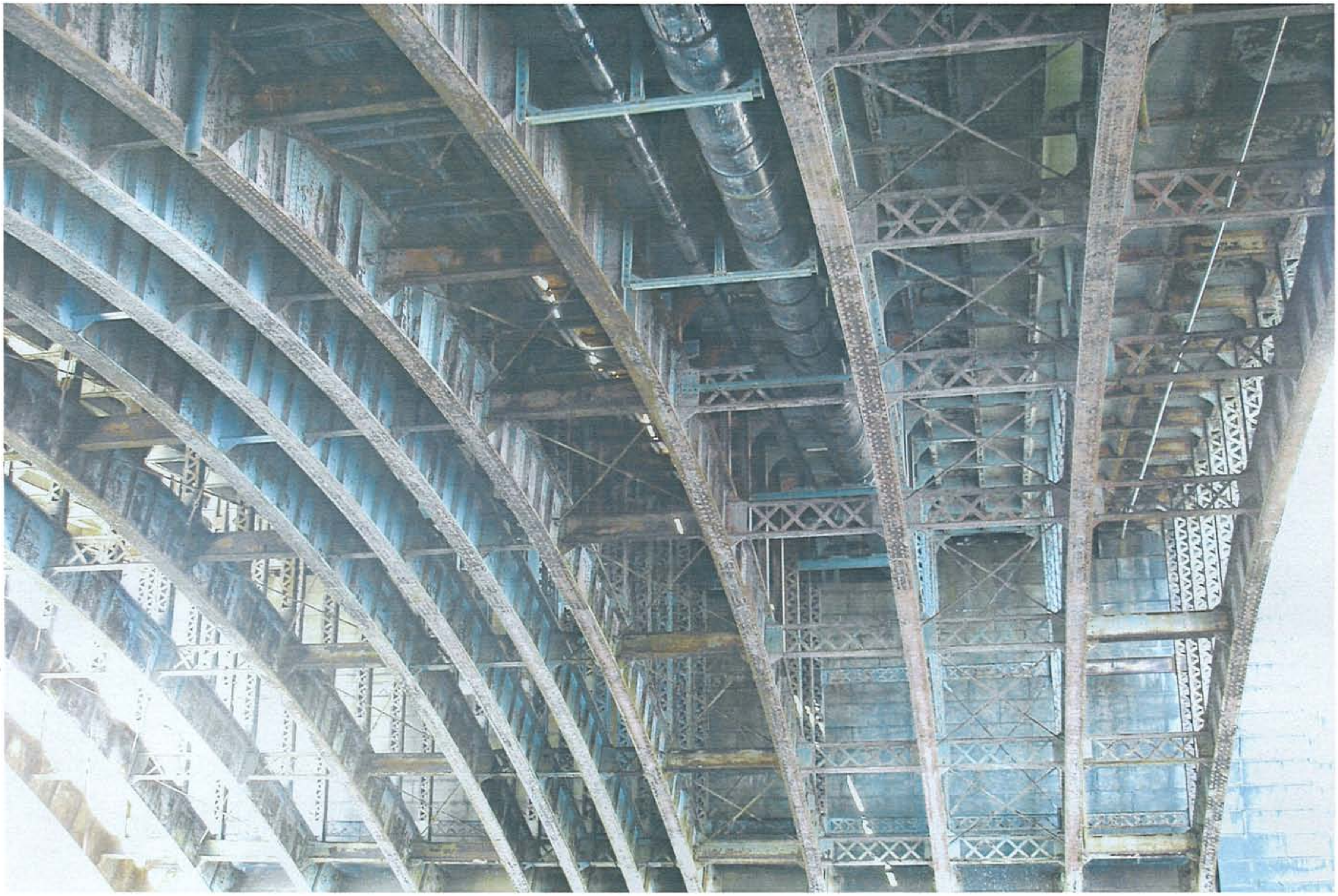
Rehabilitation and Restoration of the Longfellow Bridge

Environmental Notification Form

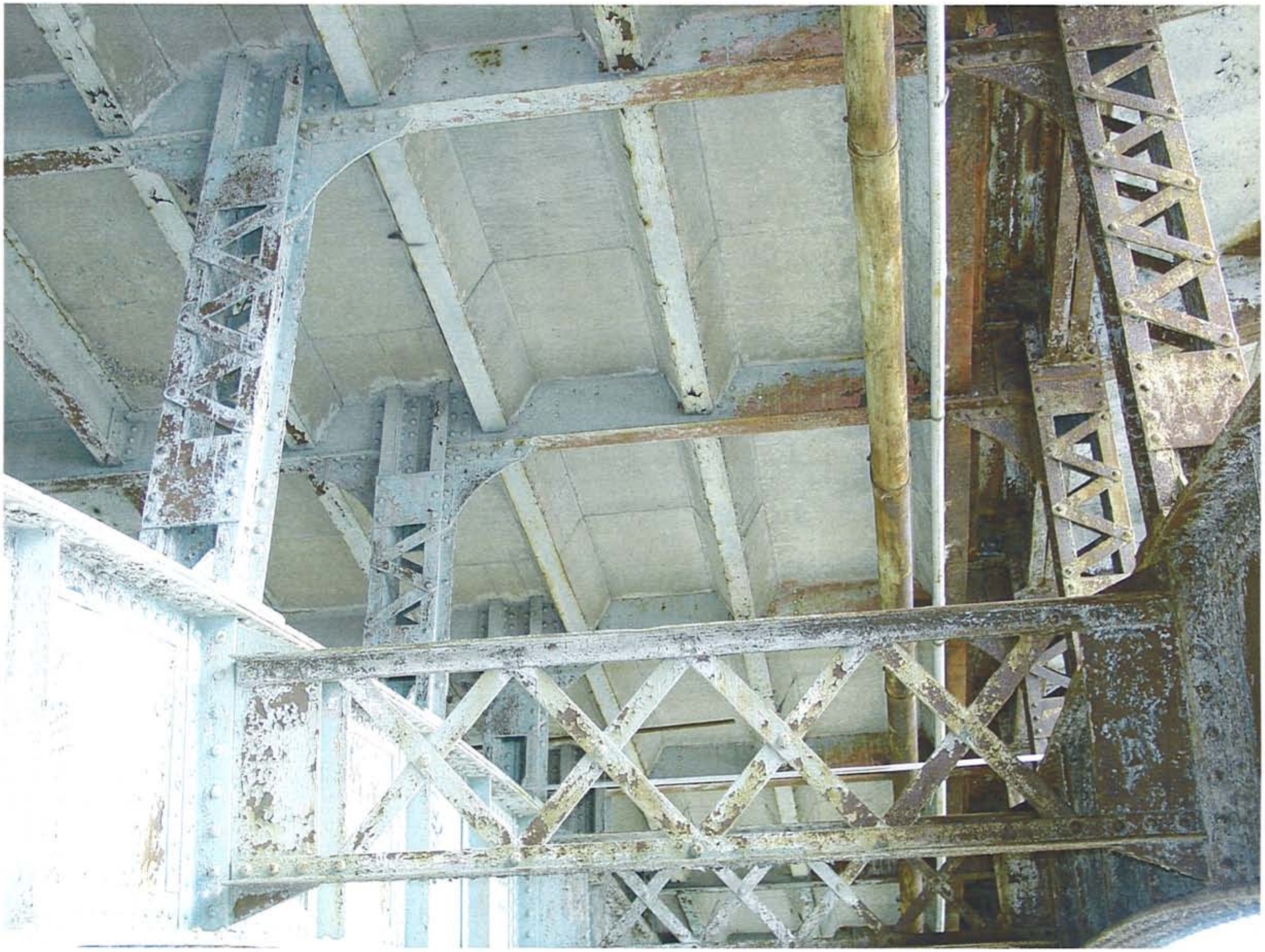
Abutment Tower

September 2006

Attachment 1



MASS HIGHWAY	JE JACOBS	Rehabilitation and Restoration of the Longfellow Bridge	Bridge Superstructure from the Water Level	September 2006
		Environmental Notification Form		Attachment 1



MASS HIGHWAY

JE JACOBS

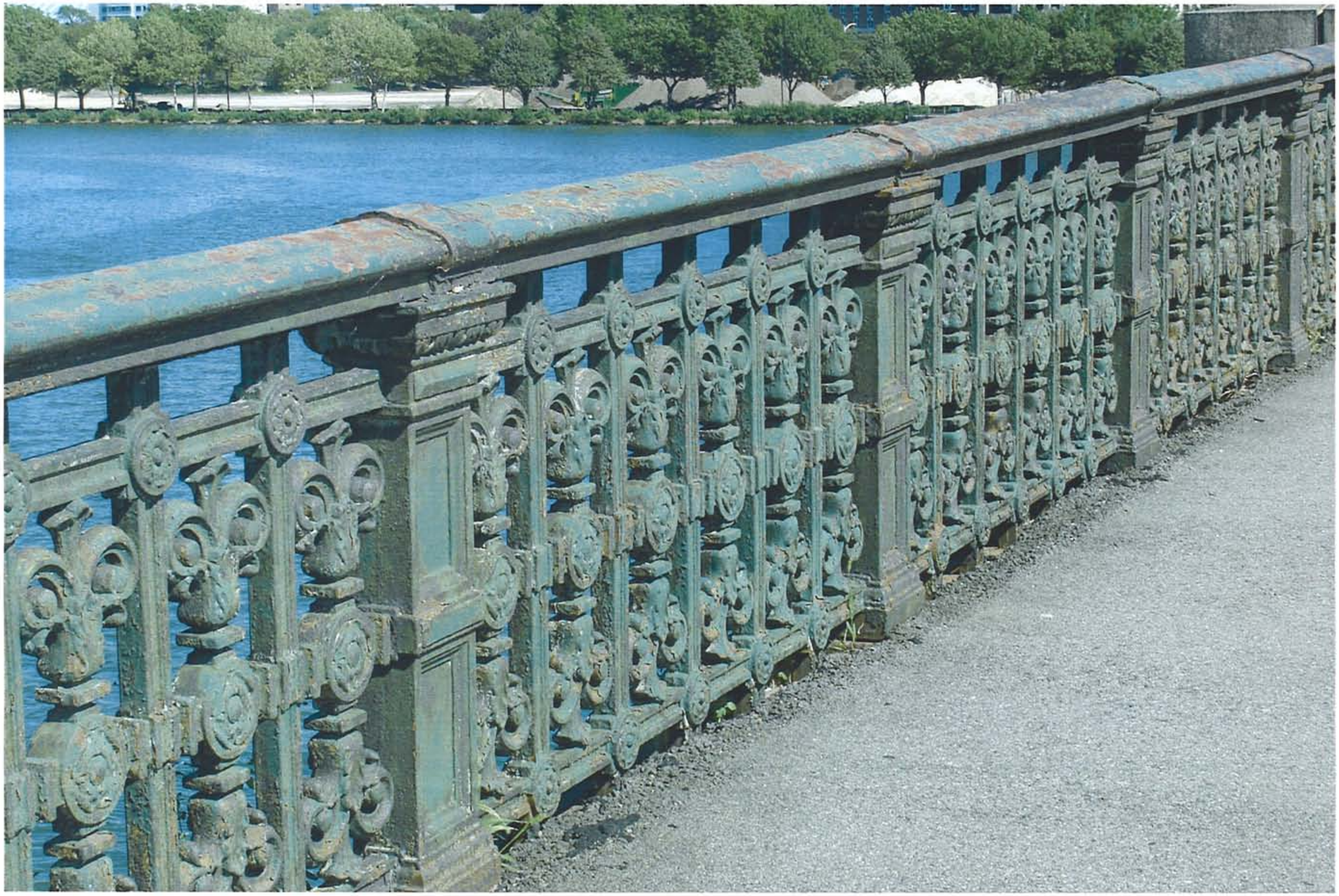
Rehabilitation and Restoration of the Longfellow Bridge

Environmental Notification Form

Typical Latticework Structural Members

September 2006

Attachment 1



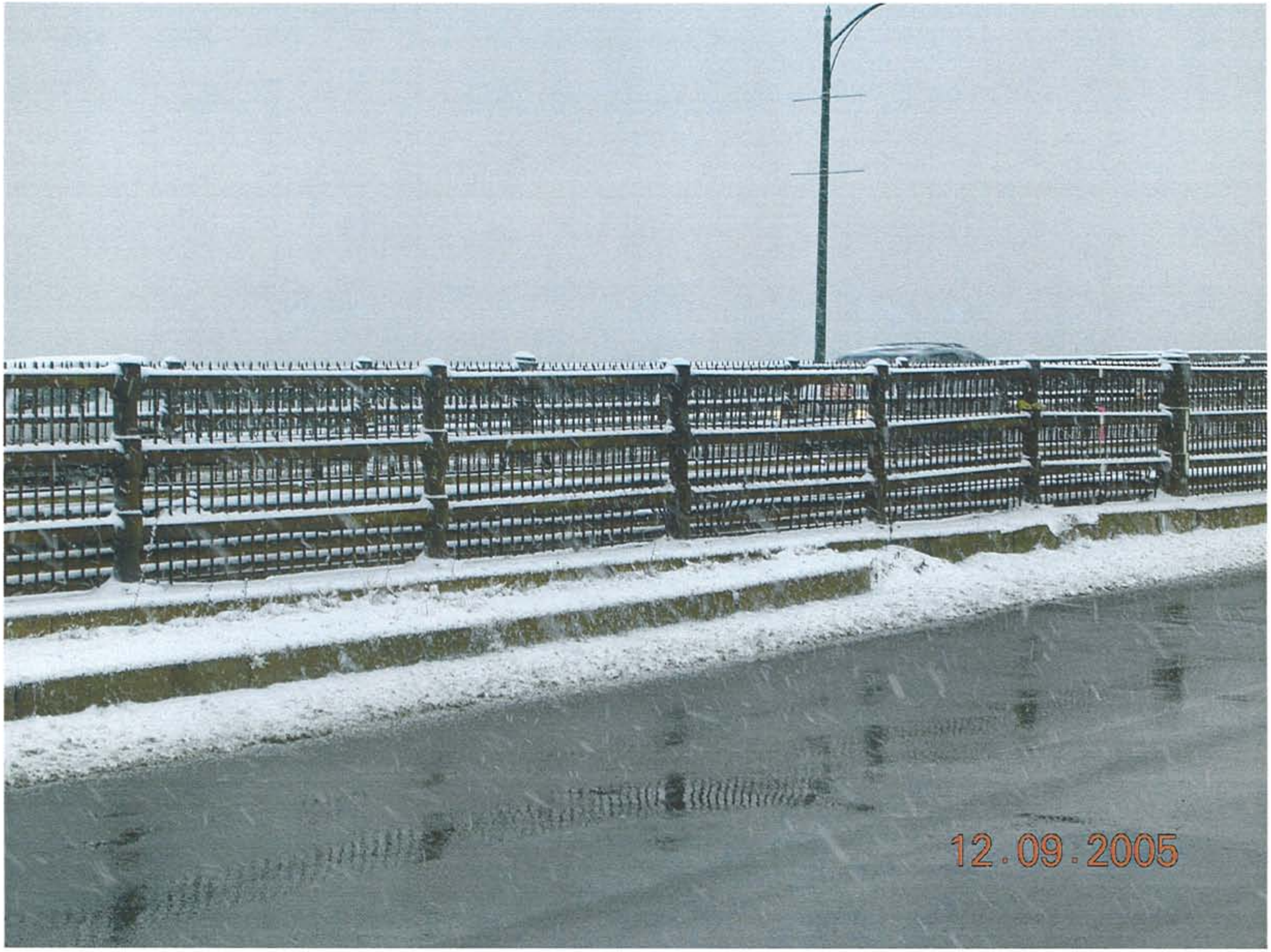
Rehabilitation and Restoration
of the Longfellow Bridge

Environmental Notification Form

Outside Railing

September 2006

Attachment 1



MASS HIGHWAY dcr

JE JACOBS

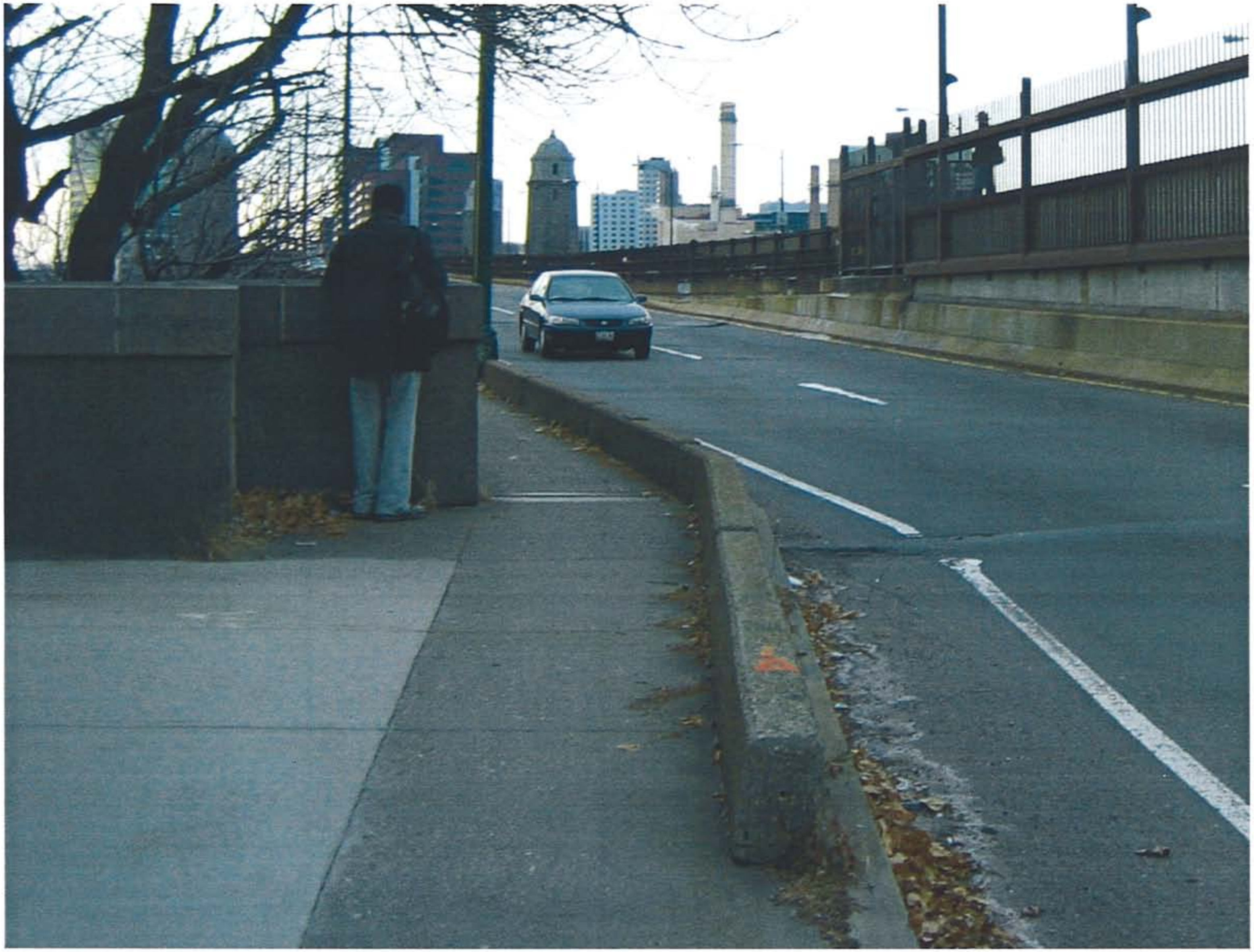
Rehabilitation and Restoration of the Longfellow Bridge

Environmental Notification Form

MBTA Right of Way Railing

September 2006

Attachment 1



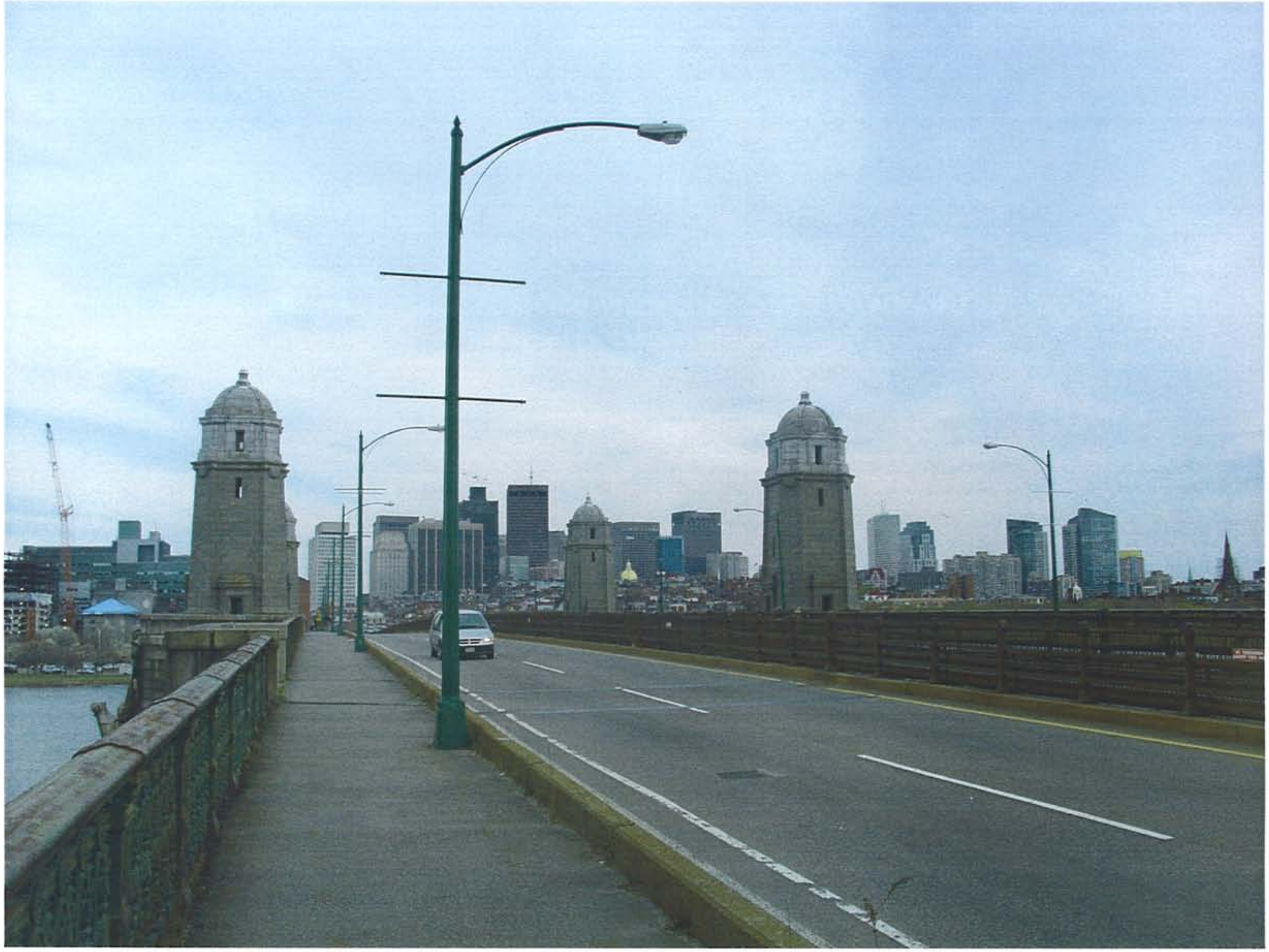
Rehabilitation and Restoration of the Longfellow Bridge

Environmental Notification Form

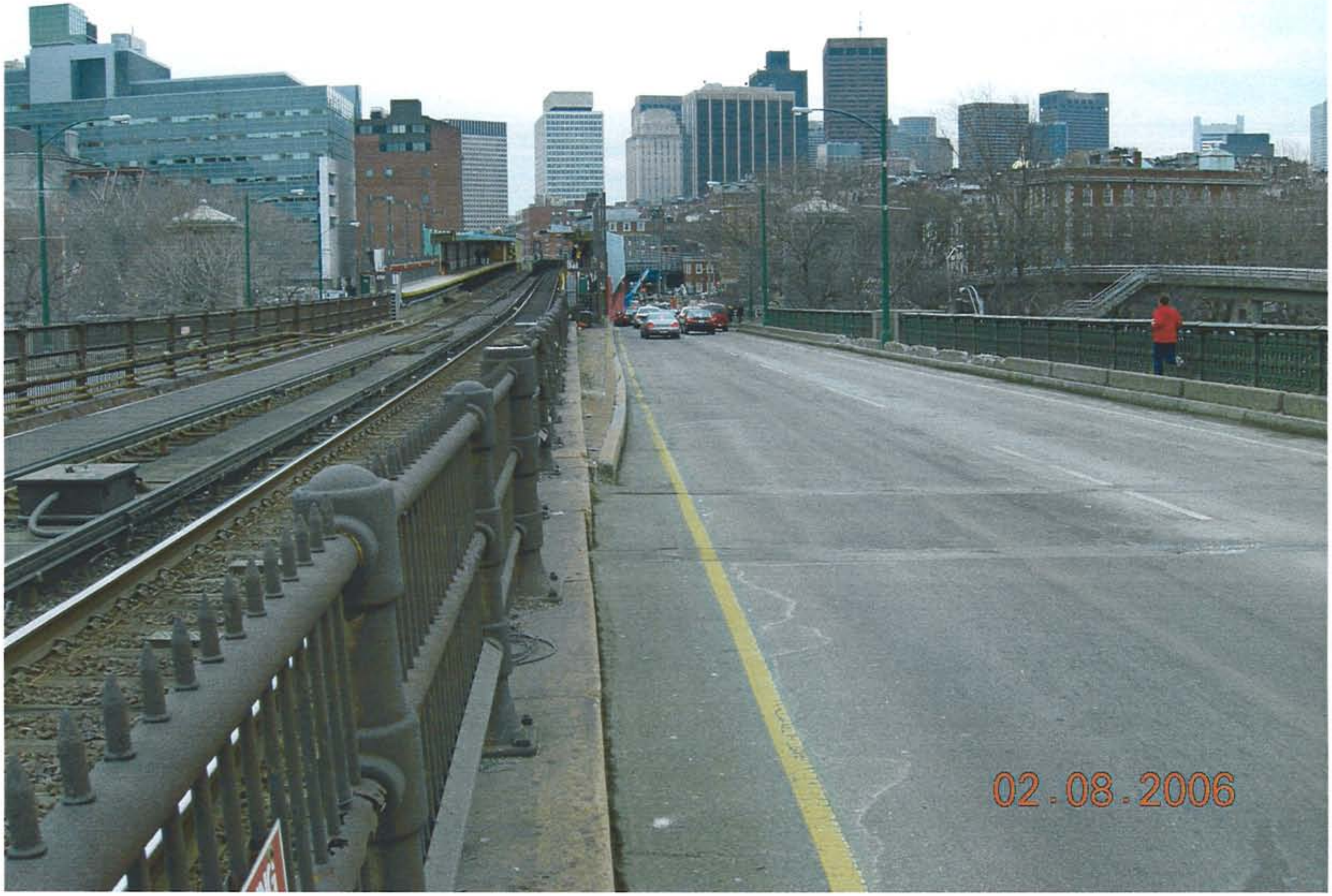
Curb Between Roadway and Sidewalk

September 2006

Attachment 1

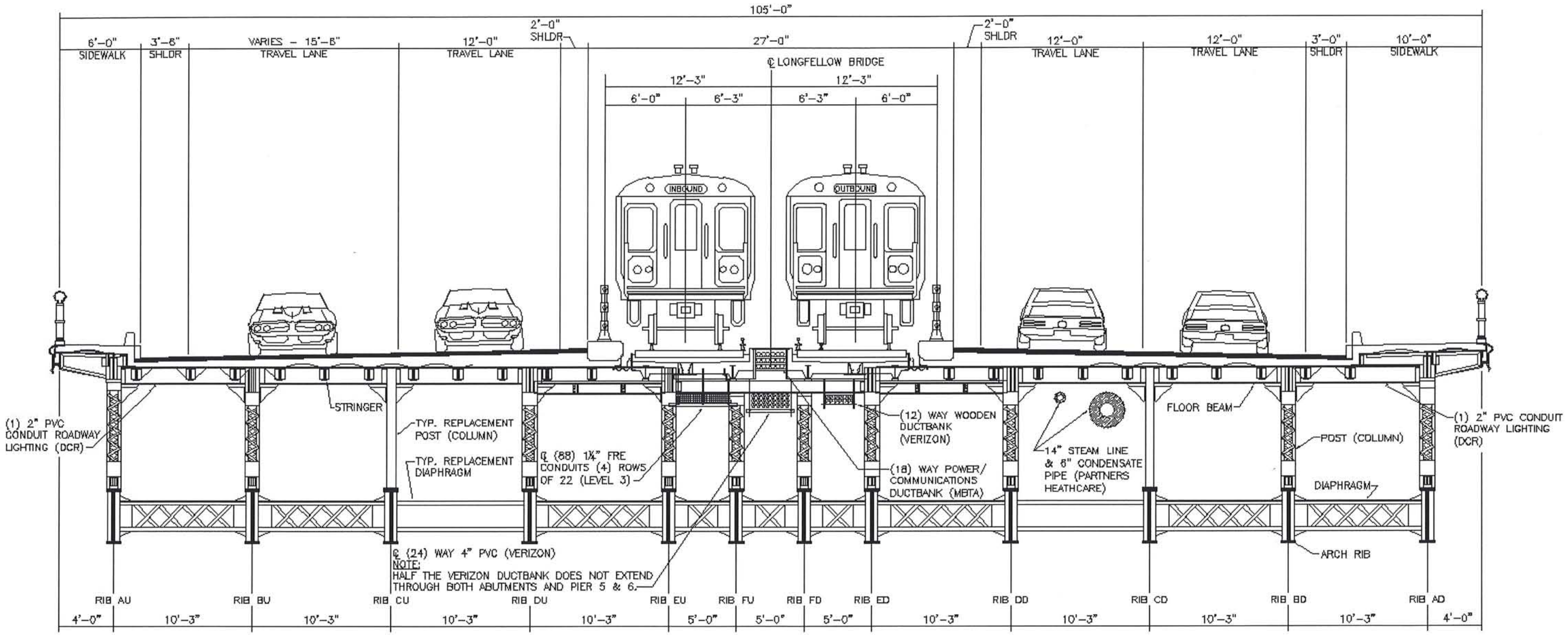


MASS HIGHWAY dcr	JE JACOBS	Rehabilitation and Restoration of the Longfellow Bridge Environmental Notification Form	Roadway Light Standard	September 2006 Attachment 1



02.08.2006

JACOBS	Rehabilitation and Restoration of the Longfellow Bridge	Constricted Area Next to the Charles Station Passenger Platform	September 2006
	Environmental Notification Form		Attachment 1


105'-0"
6'-0" SIDEWALK
3'-6" SHLDR
VARIES – 15'-6" TRAVEL LANE
12'-0" TRAVEL LANE
2'-0" SHLDR
27'-0"
℄ LONGFELLOW BRIDGE
12'-3"
12'-3"
6'-0"
6'-3"
6'-3"
6'-0"
2'-0" SHLDR
12'-0" TRAVEL LANE
12'-0" TRAVEL LANE
3'-0" SHLDR
10'-0" SIDEWALK
INBOUND
OUTBOUND
(1) 2" PVC CONDUIT ROADWAY LIGHTING (DCR)
STRINGER
TYP. REPLACEMENT POST (COLUMN)
TYP. REPLACEMENT DIAPHRAGM
℄ (88) 1¼" FRE CONDUITS (4) ROWS OF 22 (LEVEL 3)
(12) WAY WOODEN DUCTBANK (VERIZON)
(18) WAY POWER/ COMMUNICATIONS DUCTBANK (MBTA)
14" STEAM LINE & 6" CONDENSATE PIPE (PARTNERS HEATHCARE)
FLOOR BEAM
POST (COLUMN)
DIAPHRAGM
ARCH RIB
(1) 2" PVC CONDUIT ROADWAY LIGHTING (DCR)
℄ (24) WAY 4" PVC (VERIZON)
NOTE:
HALF THE VERIZON DUCTBANK DOES NOT EXTEND THROUGH BOTH ABUTMENTS AND PIER 5 & 6.
RIB AU
RIB BU
RIB CU
RIB DU
RIB EU
RIB FU
RIB FD
RIB ED
RIB DD
RIB CD
RIB BD
RIB AD
4'-0"
10'-3"
10'-3"
10'-3"
10'-3"
5'-0"
5'-0"
5'-0"
10'-3"
10'-3"
10'-3"
10'-3"
4'-0"

EXISTING TYPICAL SECTION

(LOOKING TOWARDS CAMBRIDGE)

MASS HIGHWAY dcr

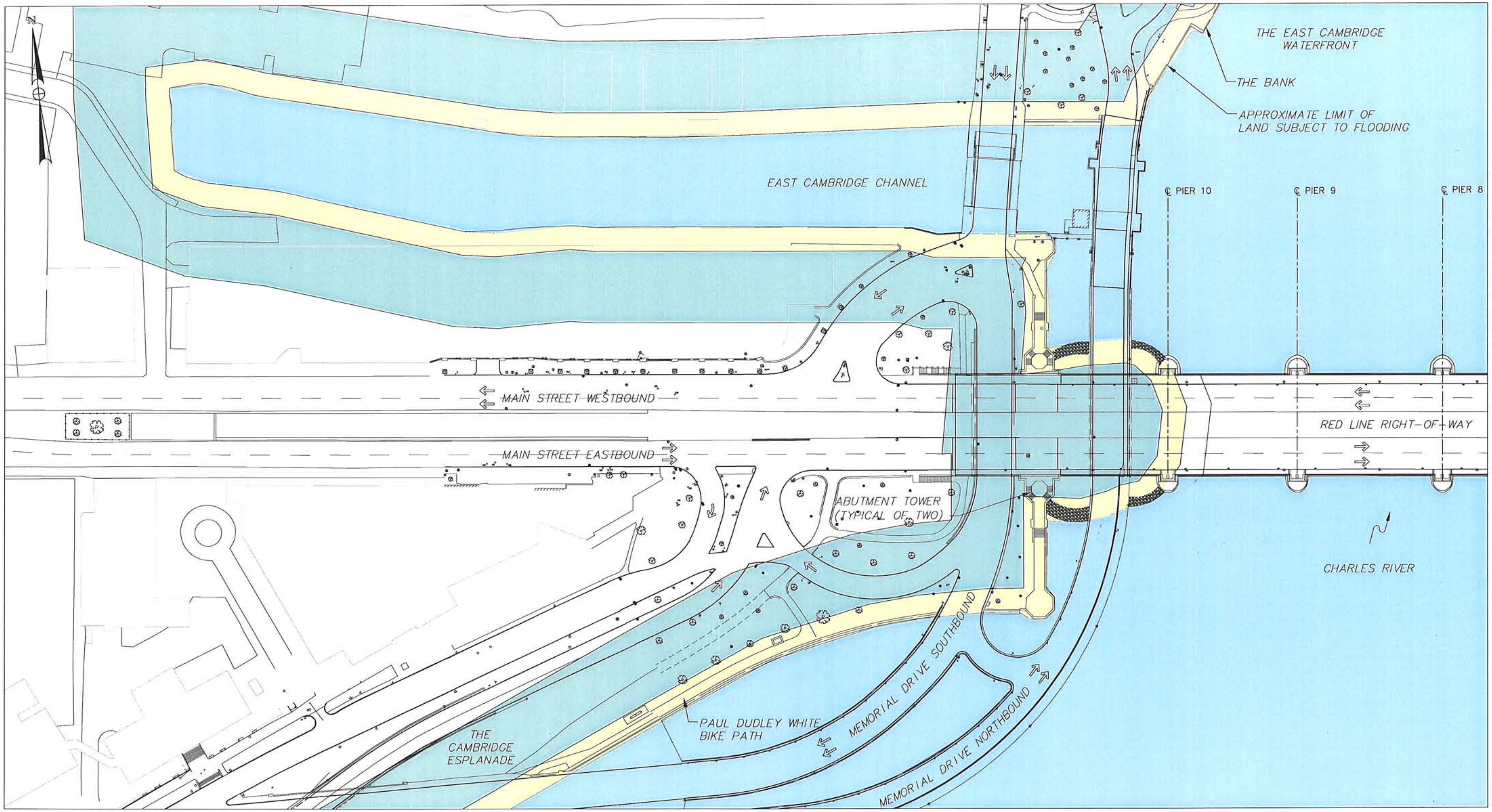
JE JACOBS

Rehabilitation and Restoration of the Longfellow Bridge

Environmental Notification Form

Existing Typical Section

September 2006


N
THE EAST CAMBRIDGE WATERFRONT
THE BANK
APPROXIMATE LIMIT OF LAND SUBJECT TO FLOODING
EAST CAMBRIDGE CHANNEL
℄ PIER 10
℄ PIER 9
℄ PIER 8
MAIN STREET WESTBOUND
RED LINE RIGHT-OF-WAY
MAIN STREET EASTBOUND
ABUTMENT TOWER (TYPICAL OF TWO)
CHARLES RIVER
MEMORIAL DRIVE SOUTHBOUND
PAUL DUDLEY WHITE BIKE PATH
THE CAMBRIDGE ESPLANADE
MEMORIAL DRIVE NORTHBOUND

50 0 25 50 100 200
SCALE IN FEET

LEGEND

🟦	LAND UNDER WATER
🟨	25 FOOT RIVERFRONT
🟦	100 FOOT WETLAND BUFFER

JACOBS
Two Center Plaza
Boston, MA. 02108-1906

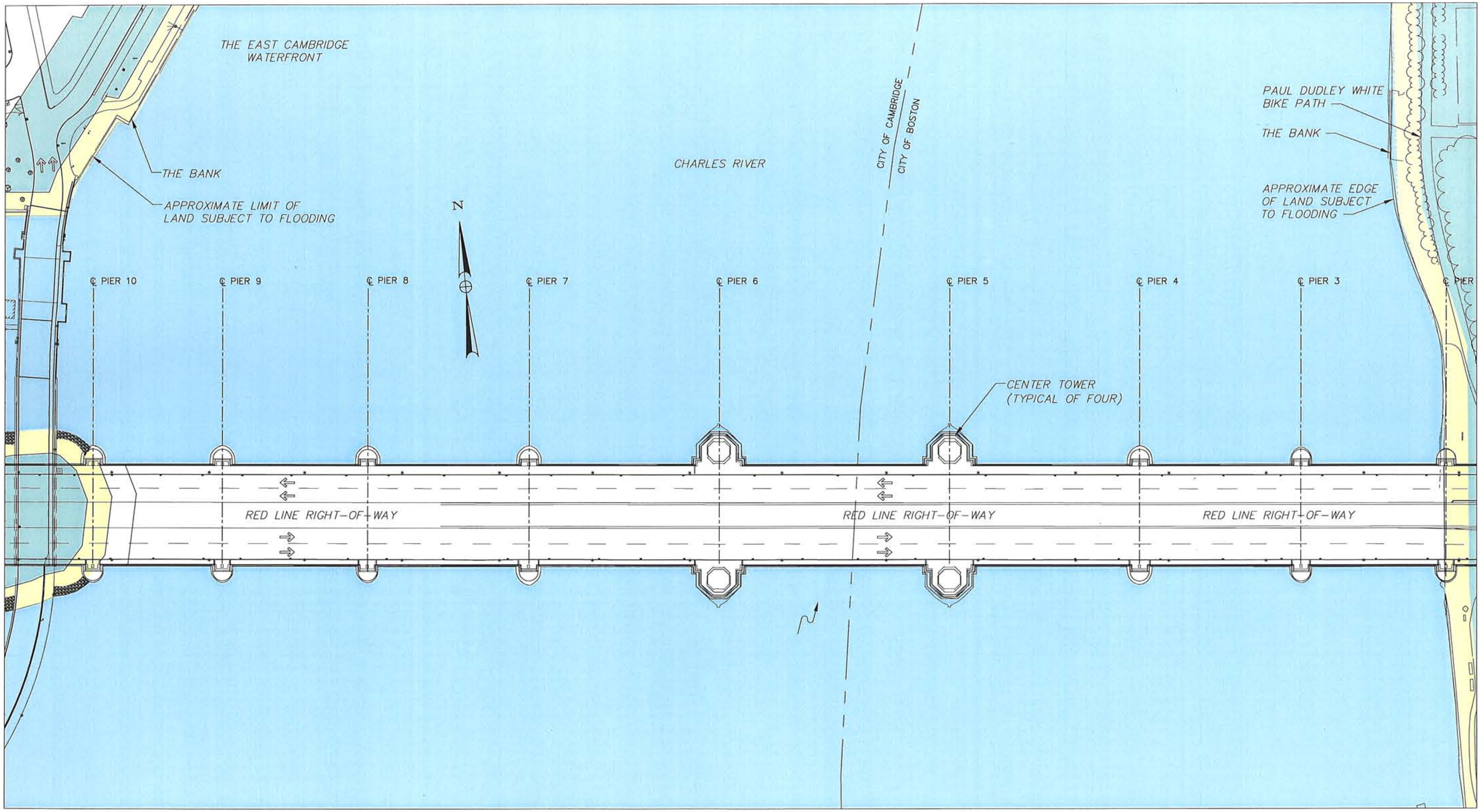
Existing Site Plan
Cambridge Side

JACOBS PROJECT No. E2X24200 JULY 2006

BOSTON AND CAMBRIDGE
ROUTE 3 – LONGFELLOW BRIDGE
BRIDGE No. B-16-009 = C-01-002 (4FO)

1 OF 3

F:\Proj\E2X24200 Longfellow\700 CADD & PDF\704env\ENF\ESP-Boston Side.dwg (CAMBRIDGE SIDE) Plotted Sep 26, 2006 at 11:37am by gallogef



LEGEND

- 🟦 LAND UNDER WATER
- 🟨 25 FOOT RIVERFRONT
- 🟩 100 FOOT WETLAND BUFFER

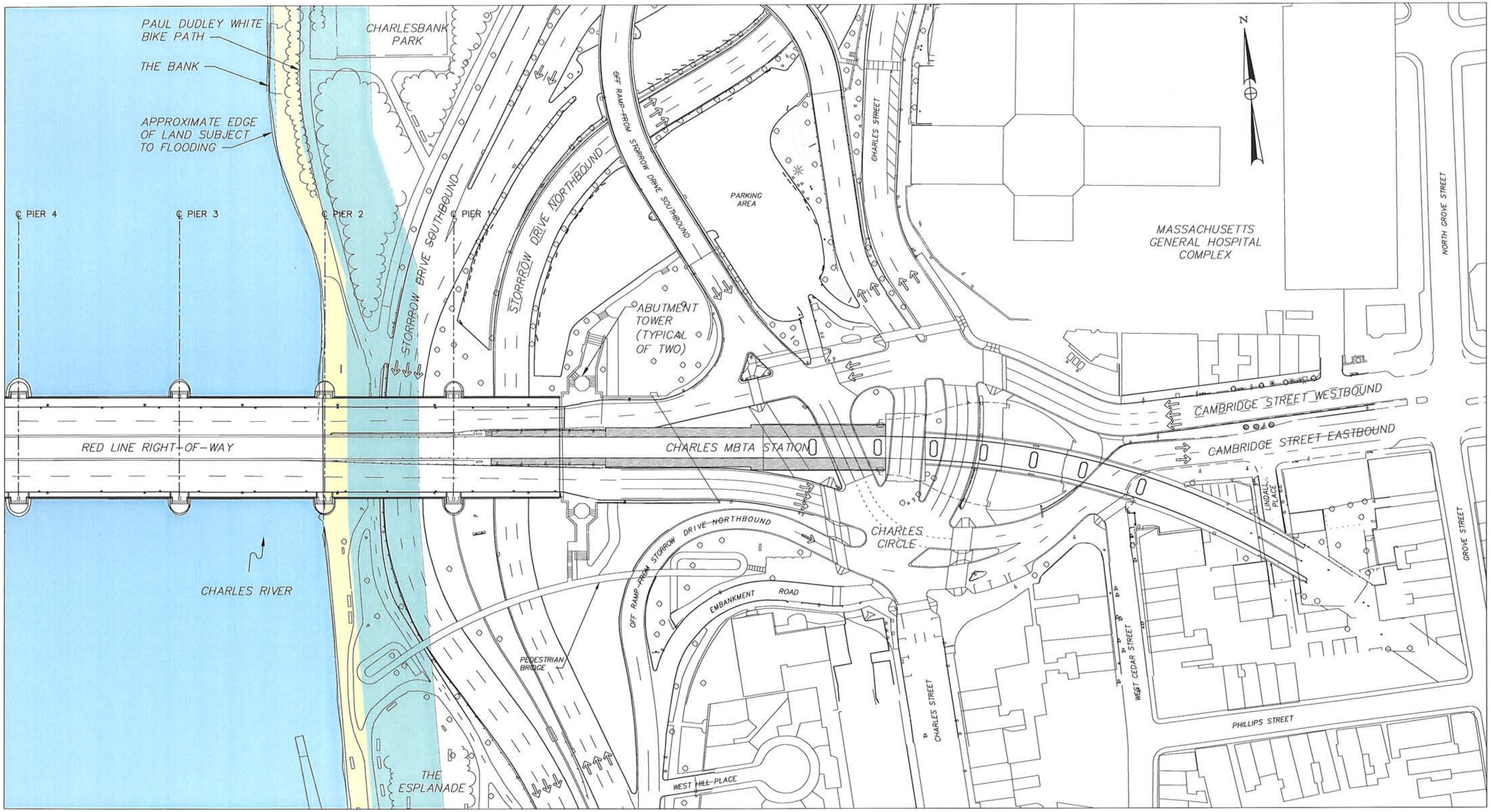
JACOBS
Two Center Plaza
Boston, MA. 02108-1906

Existing Site Plan
Charles River

JACOBS PROJECT No. E2X24200 JULY 2006

BOSTON AND CAMBRIDGE
ROUTE 3 – LONGFELLOW BRIDGE
BRIDGE No. B-16-009 = C-01-002 (4FO)

F:\Proj\E2X24200 Longfellow\700 CADD & PDF\704env\ENF\ESP-Boston Side.dwg (RIVER) Plotted Sep 26, 2006 at 11:39am by gallagef



50 0 25 50 100 200

SCALE IN FEET

LEGEND

🟦	LAND UNDER WATER
🟨	25 FOOT RIVERFRONT
🟦	100 FOOT WETLAND BUFFER

JACOBS

Two Center Plaza
Boston, MA. 02108-1906

Existing Site Plan
Boston Side

JACOBS PROJECT No. E2X24200 JULY 2006

BOSTON AND CAMBRIDGE
ROUTE 3 - LONGFELLOW BRIDGE
BRIDGE No. B-16-009 = C-01-002 (4FO)

3 OF 3

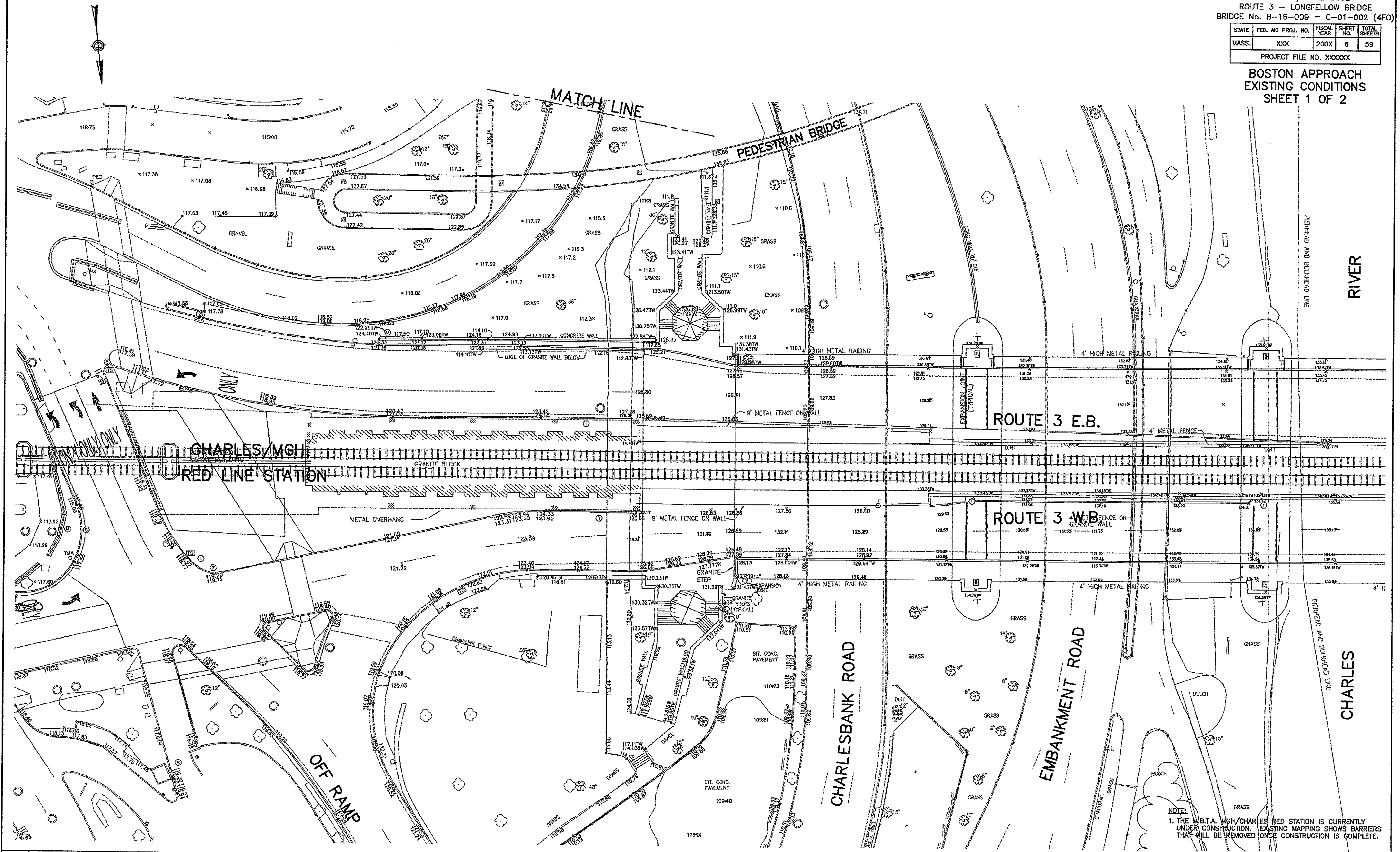
F:\Proj\E2X24200 Longfellow\700 CADD & PDF\704env\ENF\ESP-Boston Side.dwg (BOSTON SIDE) Plotted Sep 26, 2006 at 12:10pm by gallagef

BOSTON / CAMBRIDGE
ROUTE 3 – LONGFELLOW BRIDGE
BRIDGE No. B-16-009 = C-01-002 (4FO)

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	XXX	200X	6	59

PROJECT FILE NO. XXXXXX

BOSTON APPROACH
EXISTING CONDITIONS
SHEET 1 OF 2



NOTE:
1. THE M.B.T.A. MGH/CHARLES RED STATION IS CURRENTLY UNDER CONSTRUCTION. EXISTING MAPPING SHOWS BARRIERS THAT WILL BE REMOVED ONCE CONSTRUCTION IS COMPLETE.

0 10 20 40 80
SCALE IN FEET

ISSUE	DATE	DESCRIPTION	BY	CHKD	APP

JACOBS
Two Center Plaza
Boston, MA. 02108-1906

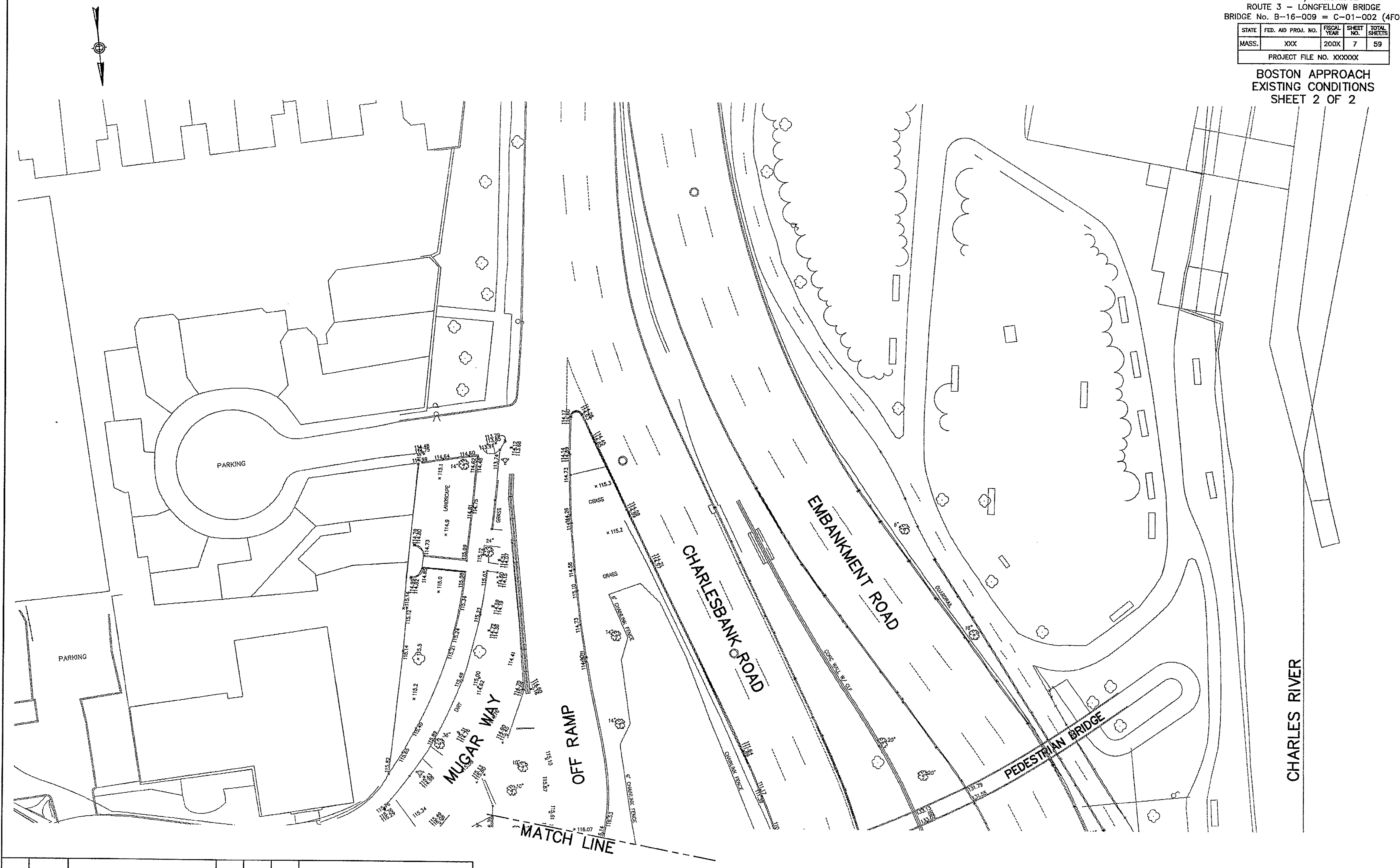
F:\Proj\E2X24200 Longfellow\700 CADD & PDF\702civil\MHD Civil submittal\LB-C-008.dwg (LB-C-008) Plotted Sep 08, 2008 at 12:09pm by nsalki

BOSTON / CAMBRIDGE
ROUTE 3 – LONGFELLOW BRIDGE
BRIDGE No. B-16-009 = C-01-002 (4FO)

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	XXX	200X	7	59

PROJECT FILE NO. XXXXXX

BOSTON APPROACH
EXISTING CONDITIONS
SHEET 2 OF 2



ISSUE	DATE	DESCRIPTION	BY	CHKD	APP

JACOBS
Two Center Plaza
Boston, MA. 02108-1906

0 10 20 40 80
SCALE IN FEET

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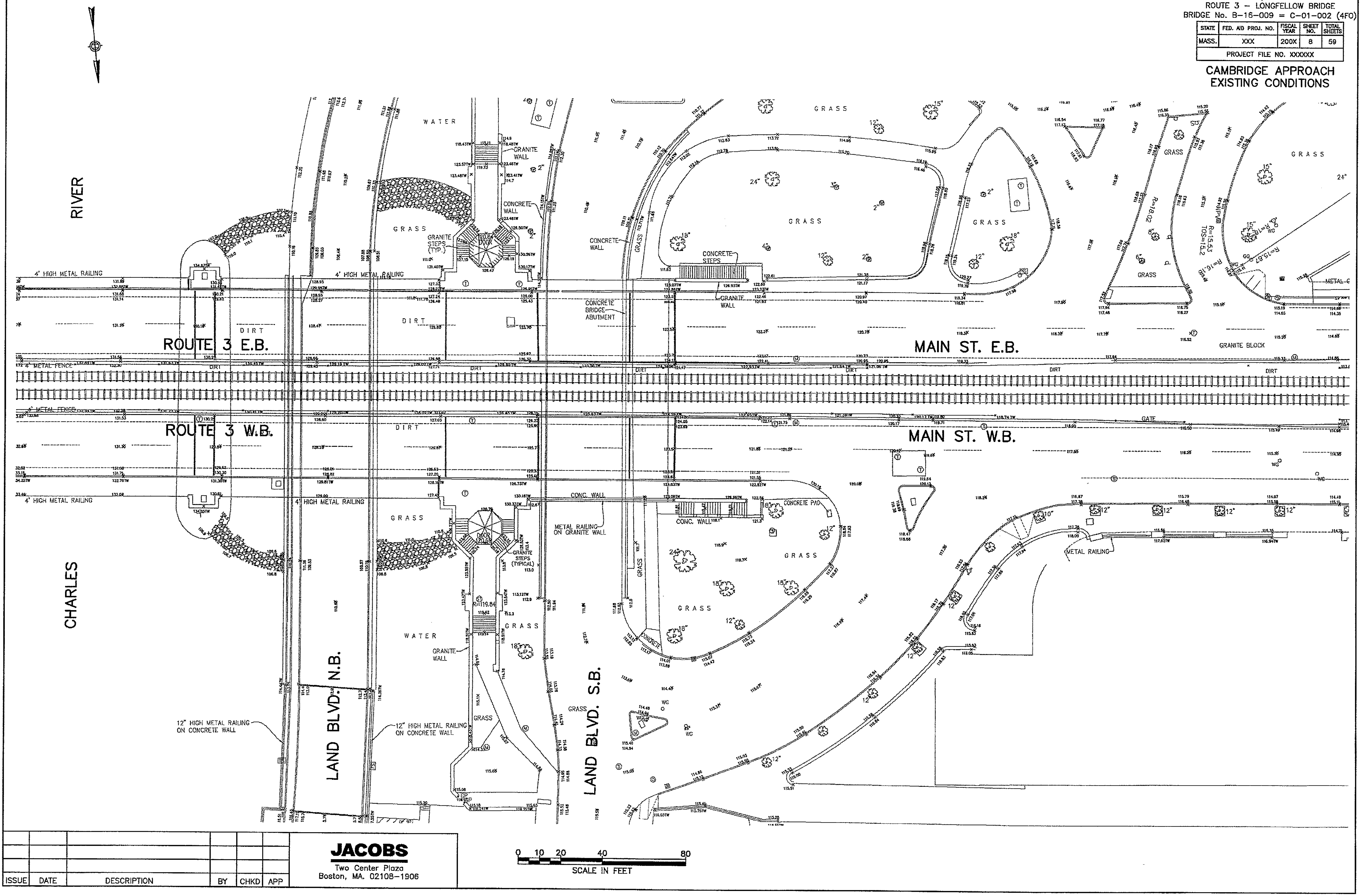
BOSTON / CAMBRIDGE
ROUTE 3 – LONGFELLOW BRIDGE
BRIDGE No. B-16-009 = C-01-002 (4FO)

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	XXX	200X	8	59
PROJECT FILE NO. XXXXXX				

CAMBRIDGE APPROACH EXISTING CONDITIONS



ISSUE	DATE	DESCRIPTION	BY	CHKD	APP

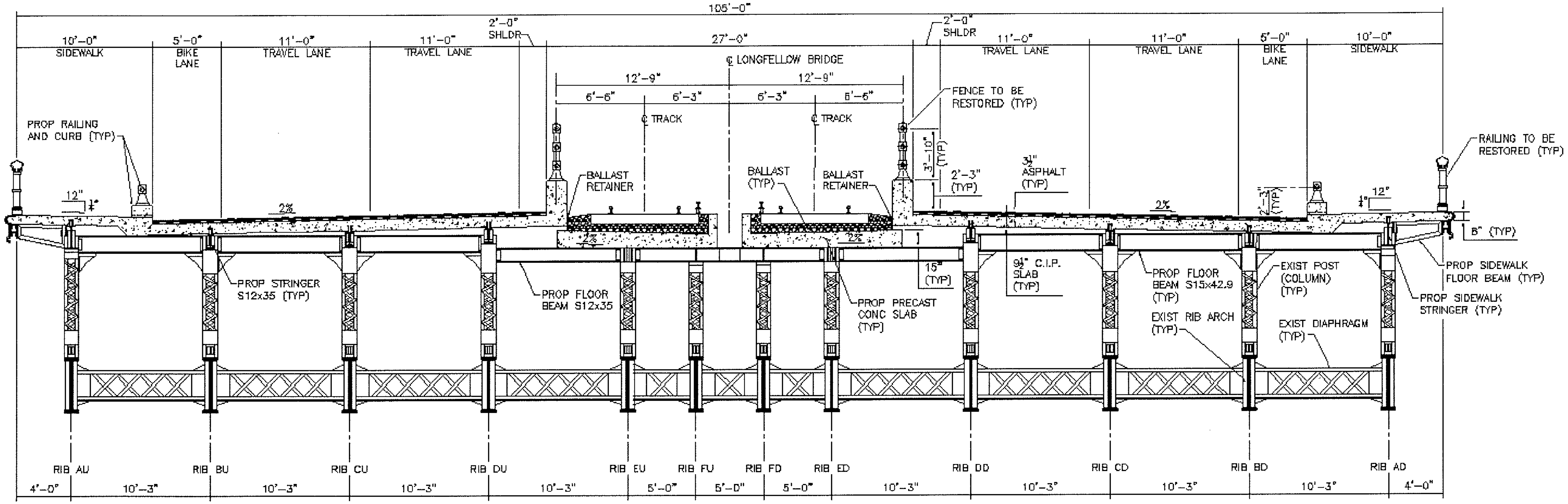
JACOBS
Two Center Plaza
Boston, MA. 02108-1906

F:\Proj\E2X24200 Longfellow\700 CADD & PDF\702civil\MHD Civil submittal\LB-C-008.dwg (LB-C-008) Plotted Sep 08, 2008 at 12:11pm by nealkl

Attachment 2

Proposed Conditions Plans

- **Proposed Typical Bridge Cross Section:** This 11 by 17 drawing shows the proposed cross section of the bridge with the available width apportioned between the various transportation uses.
- **Proposed Site Plans – Boston Side:** These two 11 by 17 drawings show the proposed conditions at the east end of the bridge in Boston at the completion of the project. Continuity of the sidewalks will be provided and the landscaping will transition to the surrounding parkland area.
- **Proposed Site Plan – Cambridge Side:** This 11 by 17 drawing shows the proposed conditions at the west end of the bridge in Cambridge at the completion of the project. Continuity of the sidewalks will be provided and the landscaping will transition to the surrounding parkland area.
- **Photo-Visualization for Spans 12 and 13:** This 8½ by 11 drawing shows the changes proposed at the last two spans at the Cambridge side of the bridge over Memorial Drive Southbound and the adjacent sidewalk. The solid support here will be replaced by a series of support piers to provide a more open passageway for pedestrians.
- **Construction Staging Plans:** This set of seven 11 by 17 drawings shows the activities during the four main stages of the construction process.



PROPOSED TYPICAL SECTION
(LOOKING TOWARDS CAMBRIDGE)

MASS HIGHWAY

JE JACOBS

Rehabilitation and Restoration of the Longfellow Bridge

Environmental Notification Form

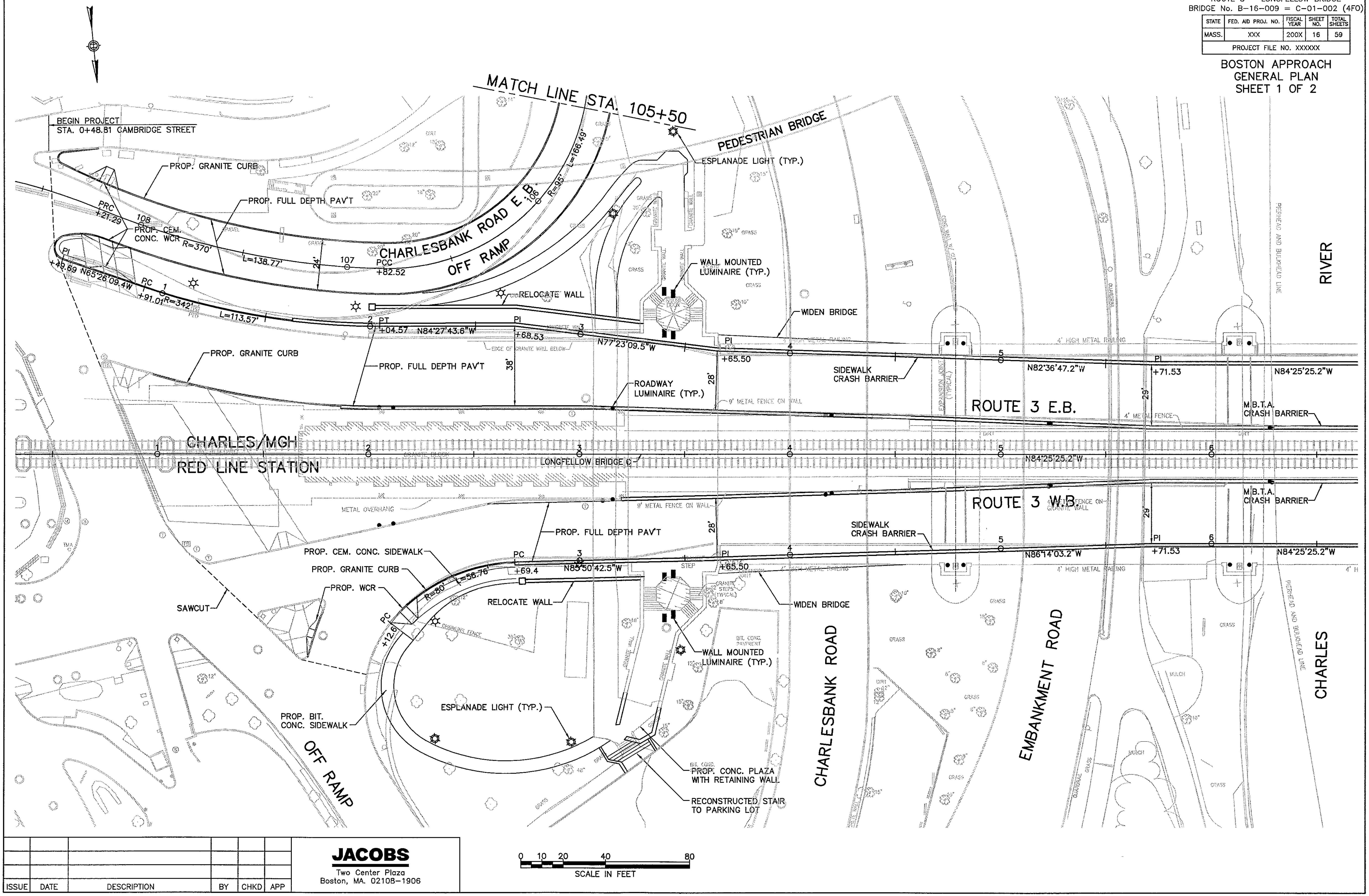
Proposed Typical Section

September 2006

BOSTON / CAMBRIDGE
ROUTE 3 – LONGFELLOW BRIDGE
BRIDGE No. B-16-009 = C-01-002 (4FO)

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	XXX	200X	16	59
PROJECT FILE NO. XXXXXX				

BOSTON APPROACH
GENERAL PLAN
SHEET 1 OF 2



ISSUE	DATE	DESCRIPTION	BY	CHKD	APP

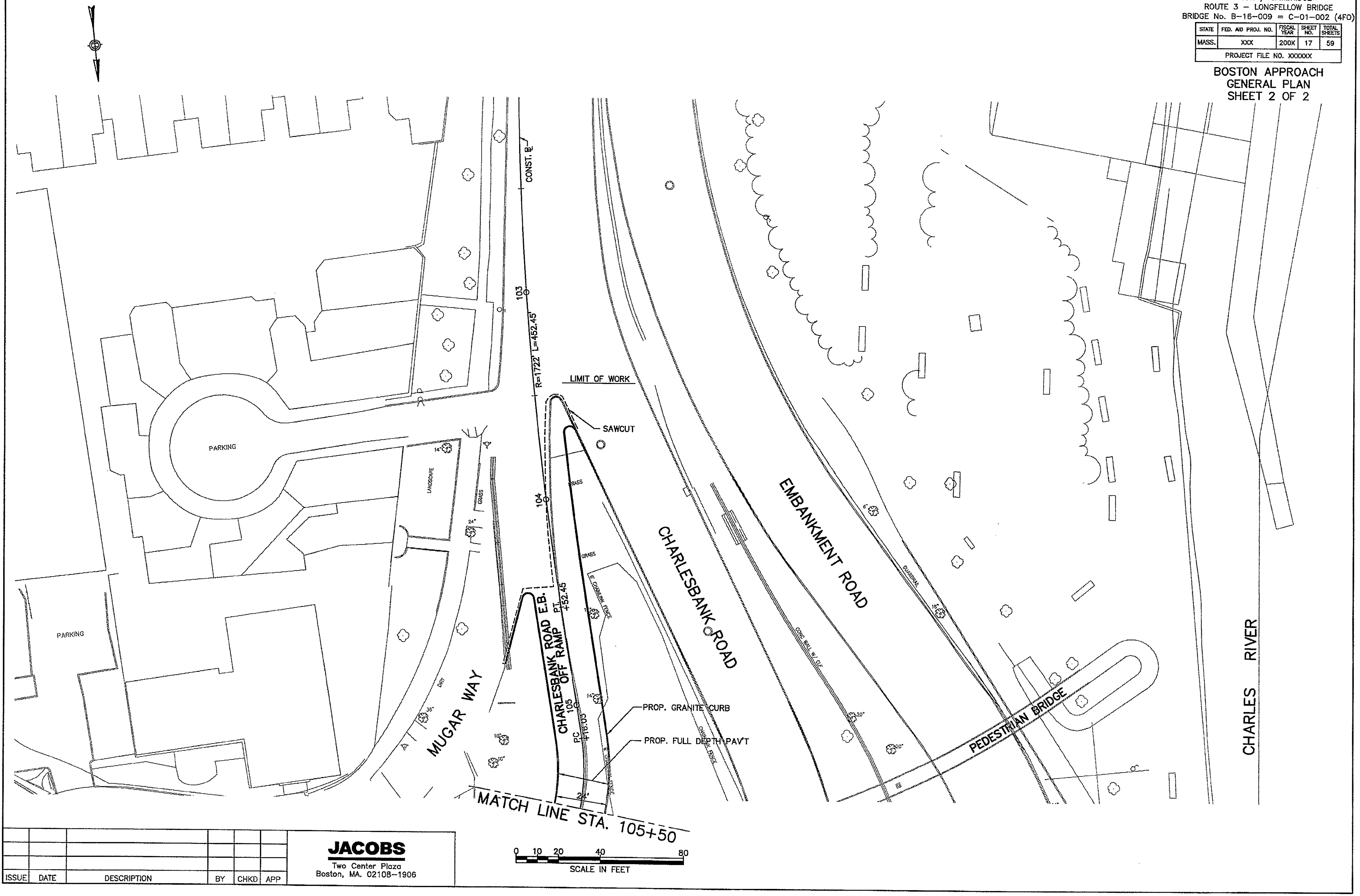
JACOBS
Two Center Plaza
Boston, MA. 02108–1906

F:\Proj\E2X24200 Longfellow\700 CADD & PDF\702civil\MHD Civil submittal\LB-C-016.dwg (LB-C-016) Plotted Sep 28, 2006 at 11:40am by gallagef

BOSTON / CAMBRIDGE
ROUTE 3 – LONGFELLOW BRIDGE
BRIDGE No. B-16-009 = C-01-002 (4FO)

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	XXX	200X	17	59
PROJECT FILE NO. XXXXXX				

BOSTON APPROACH GENERAL PLAN SHEET 2 OF 2



ISSUE	DATE	DESCRIPTION	BY	CHKD	APP

JACOBS
Two Center Plaza
Boston, MA. 02108–1906

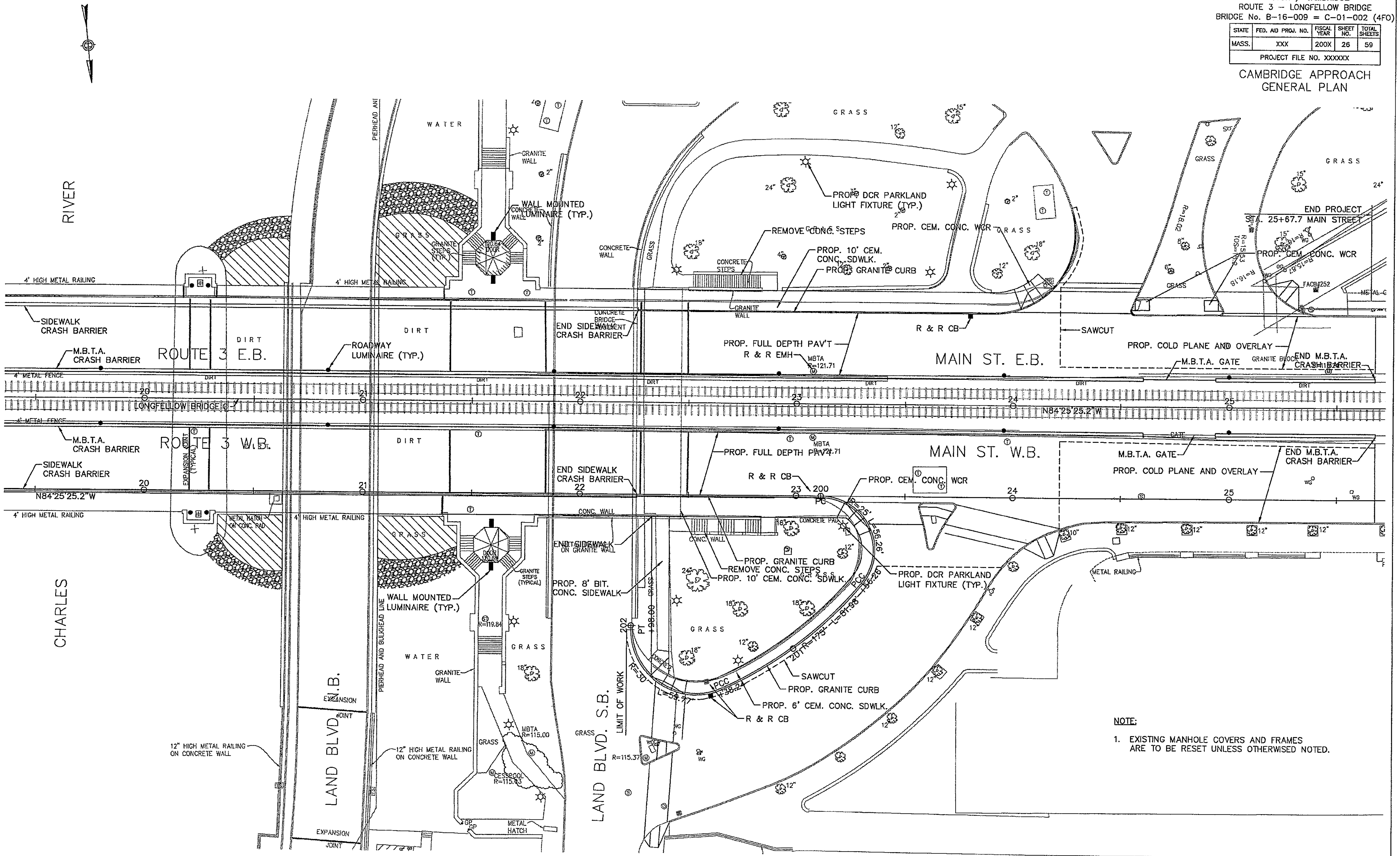
F:\Proj\E2X24200 Longfellow\700 CADD & PDF\702civil\MHD Civil submittal\LB-C-017.dwg (LB-C-017) Plotted Sep 08, 2008 at 12:27pm by neald

BOSTON / CAMBRIDGE
ROUTE 3 – LONGFELLOW BRIDGE
BRIDGE No. B-16-009 = C-01-002 (4FO)

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	XXX	200X	26	59

PROJECT FILE NO. XXXXXX

CAMBRIDGE APPROACH
GENERAL PLAN



NOTE:

1. EXISTING MANHOLE COVERS AND FRAMES ARE TO BE RESET UNLESS OTHERWISED NOTED.

ISSUE	DATE	DESCRIPTION	BY	CHKD	APP

JACOBS
Two Center Plaza
Boston, MA. 02108–1906

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SCALE IN FEET

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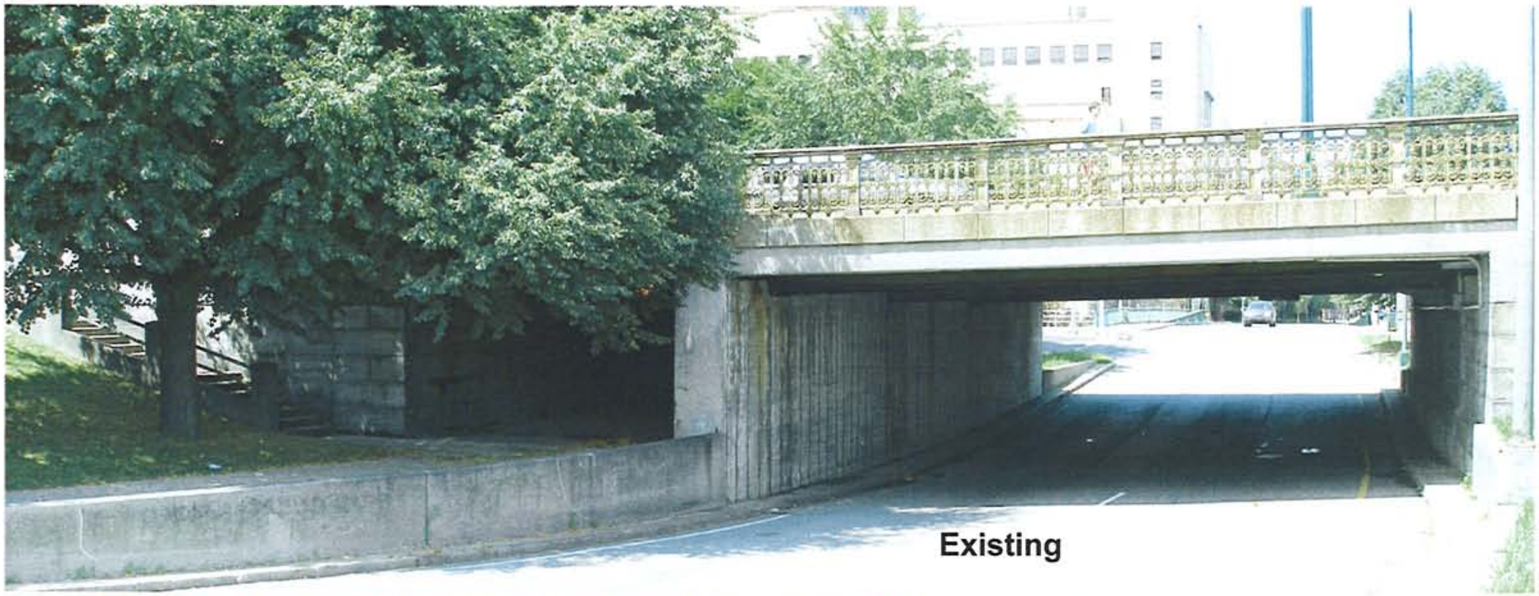
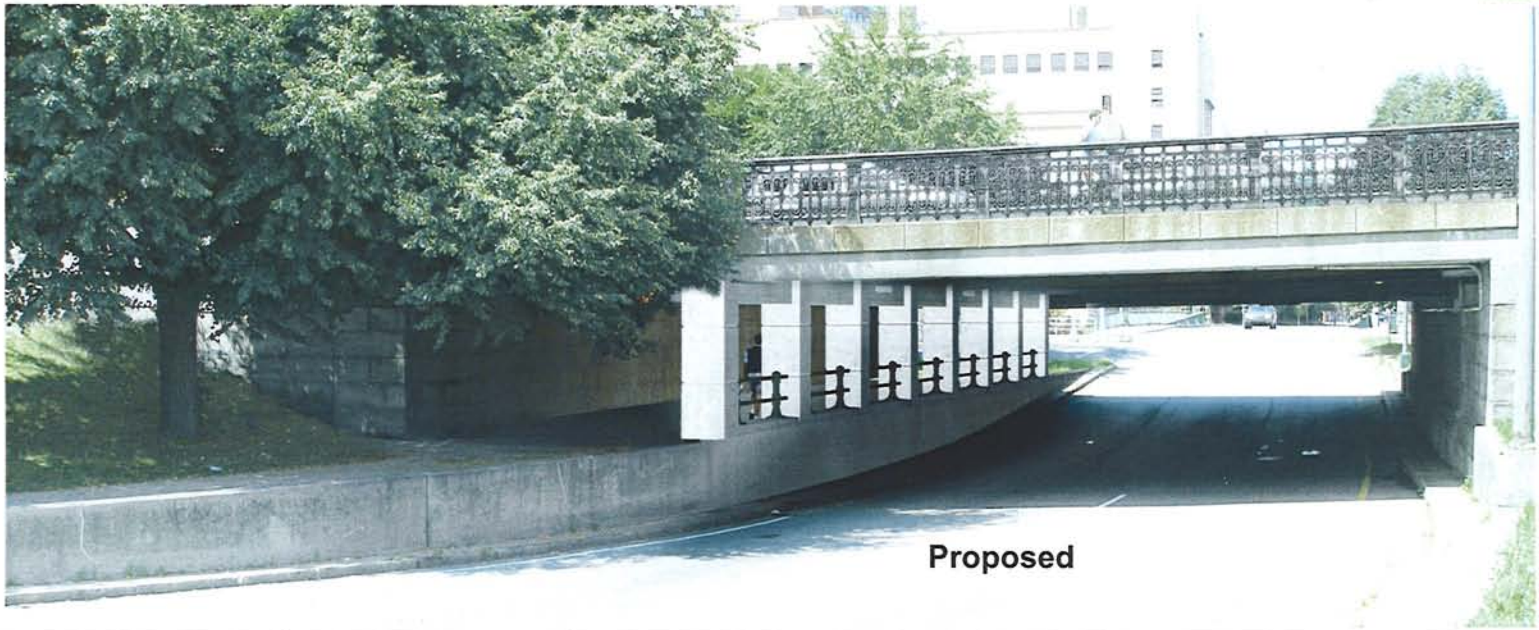


Existing



Proposed

JACOBS

Rosales Gottemoeller & Associates

Rehabilitation and Restoration of the Longfellow Bridge

Environmental Notification Form

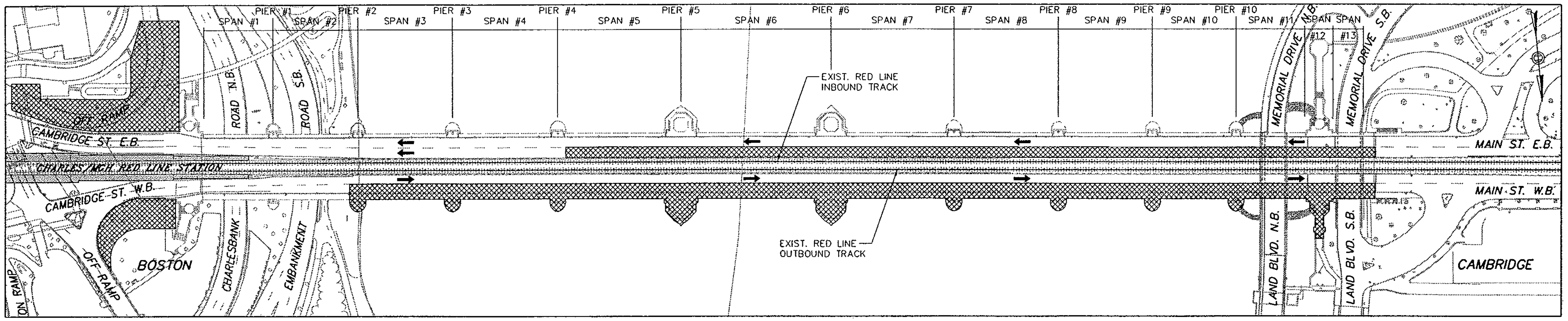
Spans 12 and 13
Proposed Underpass
Photo-Visualization

September 2006

BOSTON / CAMBRIDGE
ROUTE 3 - LONGFELLOW BRIDGE
BRIDGE No. B-16-009 = C-01-002 (4F0)

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	XXX	200X	32	59
PROJECT FILE NO. XXXXXX				

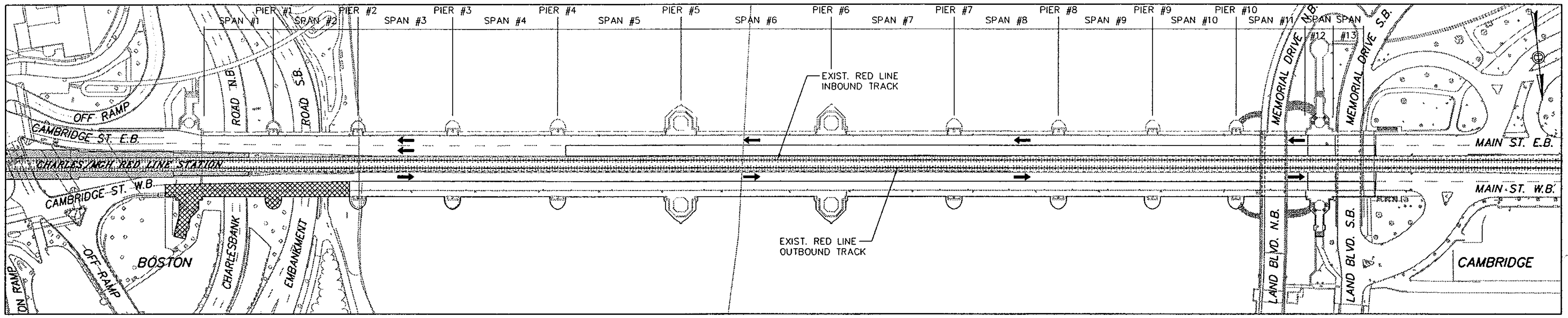
CONSTRUCTION STAGES
STAGE 1
SHEET 1 OF 4



PHASE 1

PHASE 1

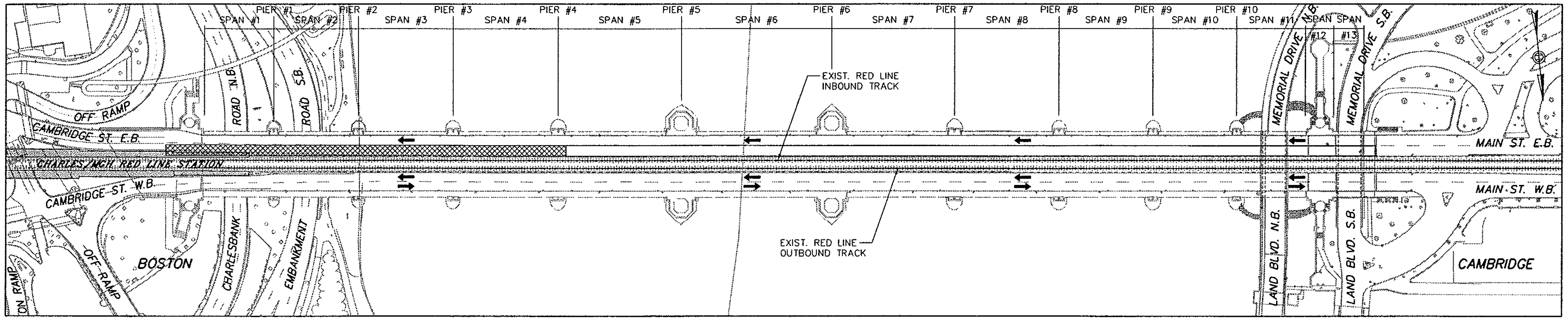
1. DEMOLISH DECK, REPAIR STEEL SUPERSTRUCTURE AND POUR NEW DECK BELOW WB SLOW LANE AND SIDEWALK FROM SPAN 3 TO 13, AND EB FAST LANE FROM SPAN 5 TO 13.
2. BUILD NEW STEAM LINE BELOW EB FAST LANE FROM SPAN 5 TO 11.
3. DISMANTLE AND RE-BUILD DOWNSTREAM TOWERS ON PIERS 5 AND 6.
4. INSTALL NEW FRAMING IN PIERS 2 THRU 10 AND CAMBRIDGE ABUTMENT OVER FULL PIER WIDTH WHERE POSSIBLE.
5. BUILD NEW RETAINING WALLS ON BOSTON APPROACHES. PROVIDE TEMPORARY SUPPORT TO EXISTING WALL AND MAINTAIN EXISTING TRAFFIC LANES. RE-LOCATE STORROW DRIVE OFF RAMP.



PHASE 2

PHASE 2

1. EXTEND WB SLOW LANE CLOSURE FROM PIER 2 TO BOSTON ABUTMENT.
2. DEMOLISH DECK, REPAIR STEEL SUPERSTRUCTURE AND POUR NEW DECK BELOW WB SLOW LANE AND SIDEWALK FROM BOSTON ABUTMENT TO SPAN 2.
3. INSTALL NEW FRAMING IN BOSTON ABUTMENT AND PIERS 1 AND 2 OVER FULL PIER WIDTH WHERE POSSIBLE.



PHASE 3

PHASE 3

1. ON COMPLETION OF WORK ON DOWNSTREAM SIDE OF BRIDGE, IMPLEMENT CONTRA-FLOW LANE AND EXTEND EB FAST LANE CLOSURE FROM PIER 4 TO BOSTON ABUTMENT.
2. DEMOLISH DECK, REPAIR STEEL SUPERSTRUCTURE AND POUR NEW DECK BELOW EB FAST LANE FROM BOSTON ABUTMENT TO SPAN 4.
3. BUILD NEW STEAM LINE BELOW EB FAST LANE FROM BOSTON ABUTMENT TO PIER 4.
4. DISCONNECT EXISTING STEAM LINE AND CONNECT NEW STEAM LINE.

ISSUE	DATE	DESCRIPTION	BY	CHKD	APP

JACOBS
Two Center Plaza
Boston, MA. 02108-1906

HOR. SCALE IN FEET
0 100 250 500

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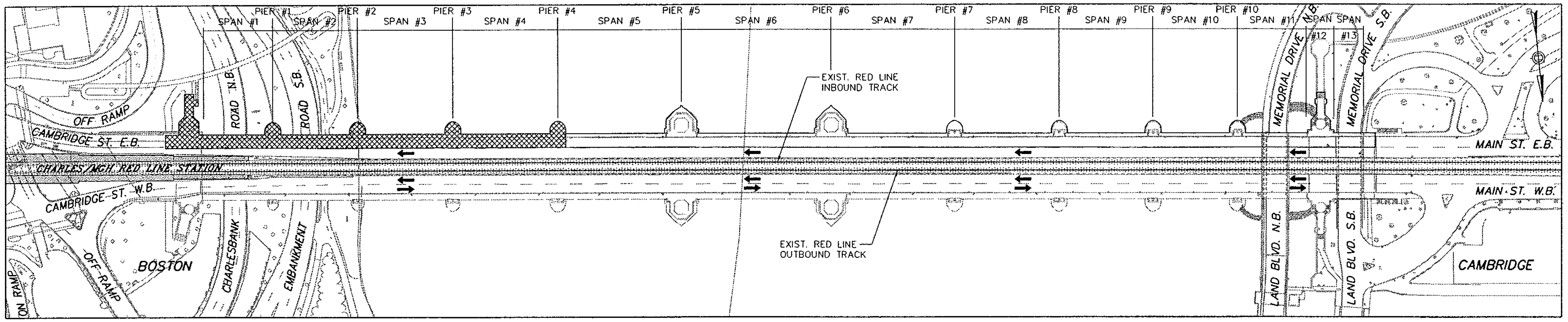
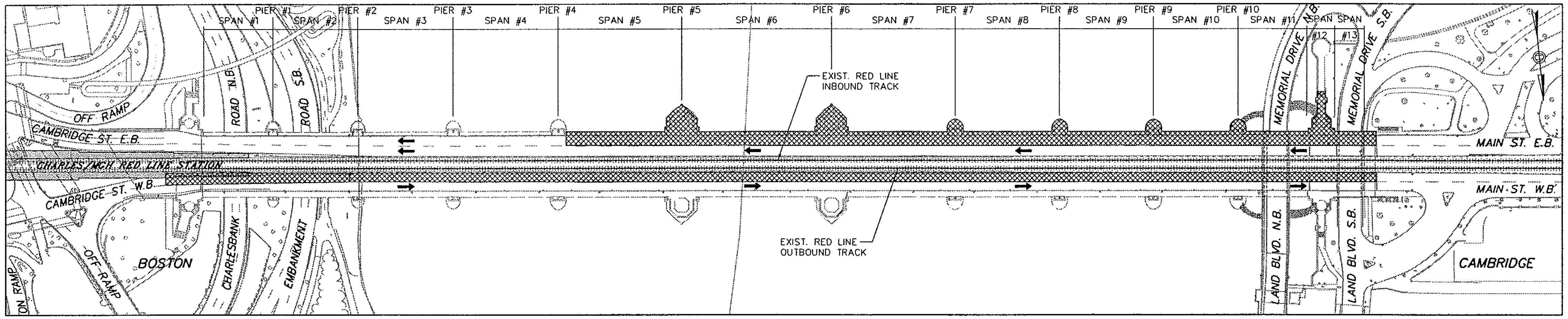
BOSTON / CAMBRIDGE
ROUTE 3 – LONGFELLOW BRIDGE
BRIDGE No. B-16-009 = C-01-002 (4F0)

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	XXX	200X	33	59
PROJECT FILE NO. XXXXXX				

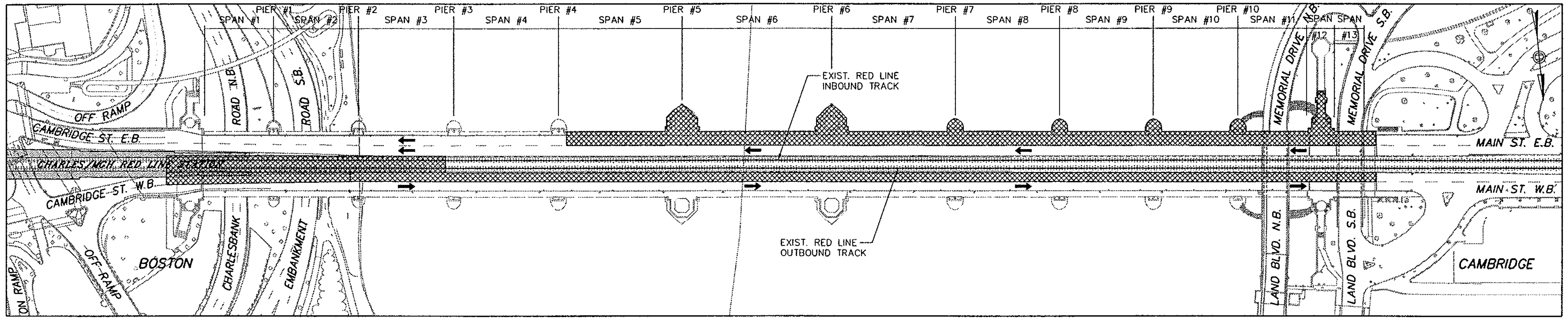
CONSTRUCTION STAGES
STAGE 2
SHEET 2 OF 4



PHASE 1



PHASE 2



PHASE 3

PHASE 1

1. CONTINUE CONTRA-FLOW LANE FROM STAGE 1 PHASE 3 AND CHANGE LANE CLOSURE FROM EB FAST LANE TO EB SLOW LANE FROM PIER 4 TO BOSTON ABUTMENT.
2. DEMOLISH DECK, REPAIR STEEL SUPERSTRUCTURE AND POUR NEW DECK BELOW EB SLOW LANE AND SIDEWALK FROM BOSTON ABUTMENT TO SPAN 4.

PHASE 2

1. DEMOLISH DECK, REPAIR STEEL SUPERSTRUCTURE AND POUR NEW DECK BELOW EB SLOW LANE AND SIDEWALK FROM SPAN 4 TO 13.
2. DEMOLISH EXISTING STEAM LINE BELOW WB FAST LANE FROM SPAN 4 TO CAMBRIDGE ABUTMENT.
3. DEMOLISH DECK, REPAIR STEEL SUPERSTRUCTURE AND POUR NEW DECK BELOW WB FAST LANE FROM BOSTON ABUTMENT TO SPAN 13. START AT BOSTON ABUTMENT AND PRIORITIZE SPANS 1 THRU 3.
4. INSTALL NEW DUCTBANKS BELOW WB FAST LANE FROM BOSTON TO CAMBRIDGE ABUTMENTS.
5. TRANSFER LIVE CABLES FROM EXISTING MBTA RESERVATION DUCTBANKS TO NEW DUCTBANKS BELOW WB FAST LANE.
6. DISMANTLE AND RE-BUILD UPSTREAM TOWERS ON PIERS 5 AND 6.
7. INSTALL NEW FRAMING IN ALL PIERS AND ABUTMENTS IN AREAS NOT COMPLETE FROM EARLIER STAGES.

PHASE 3

1. AFTER COMPLETION OF WB FAST LANE DECK IN SPANS 1 THRU 3 (IN PHASE 2), REPLACE MBTA RESERVATION DECK IN SHOOFLY TRANSITION ZONE BETWEEN BOSTON ABUTMENT AND SPAN 3 DURING WEEKEND SHUTDOWNS. REFER TO STRUCTURAL DRAWINGS FOR DETAILS.
2. ON EXISTING ALIGNMENT AT EACH END OF PROPOSED SHOOFLY, REHAB EXISTING INBOUND AND OUTBOUND TRACKS. REMOVE EXISTING CONCRETE AND TIMBER CROSS TIES AND INSTALL NEW TIMBER CROSS TIES WITH NEW 115RE JOINTED RAIL AND OTHER TRACK MATERIALS DURING TRACK OUTAGE PERIODS.

ISSUE	DATE	DESCRIPTION	BY	CHKD	APP

JACOBS
Two Center Plaza
Boston, MA. 02108-1906

HOR. SCALE IN FEET
0 100 250 500

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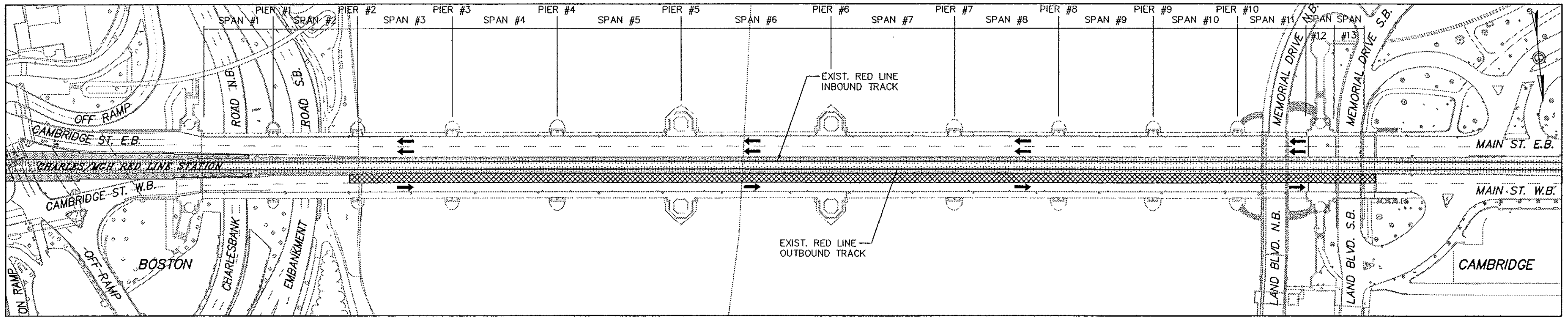
BOSTON / CAMBRIDGE
ROUTE 3 – LONGFELLOW BRIDGE
BRIDGE No. B-16-009 = C-01-002 (4F0)

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	XXX	200X	34	59
PROJECT FILE NO. XXXXXX				

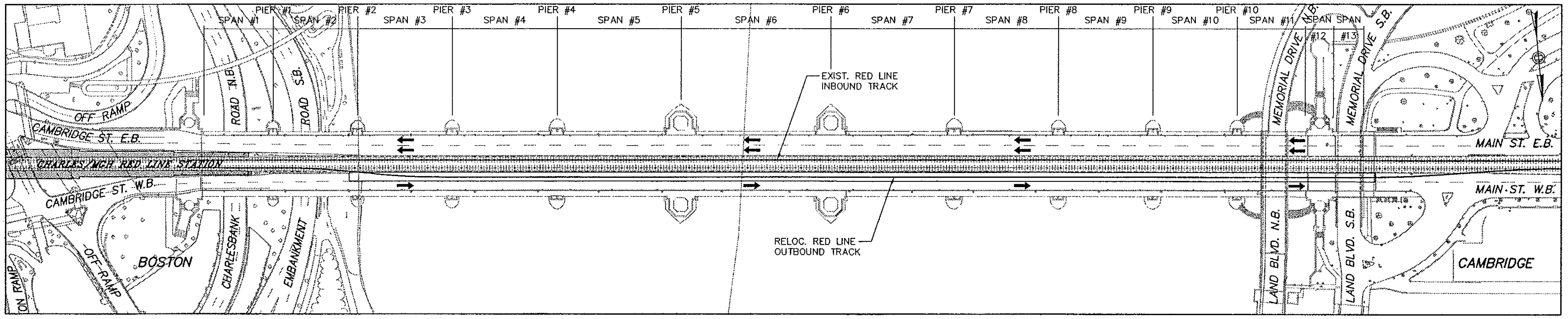
CONSTRUCTION STAGES
STAGE 3
SHEET 3 OF 4



PHASE 1

PHASE 1

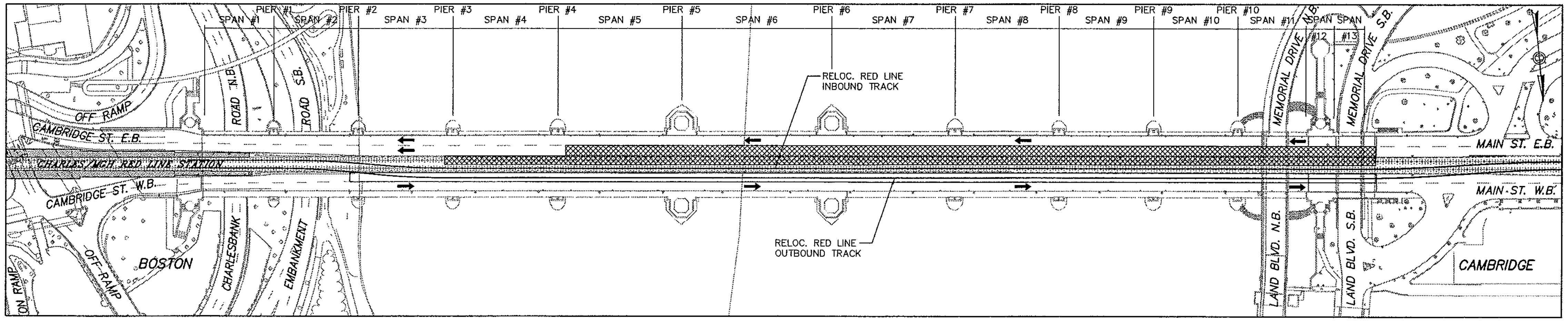
1. PREPARE WB FAST LANE FOR TEMPORARY RELOCATION OF OUTBOUND RED LINE TRACK. INSTALL TEMPORARY JERSEY BARRIER AND CHAIN LINK FENCE TO SEPARATE SHOOFLY FROM WB SLOW LANE.
2. CONSTRUCT TEMPORARY OUTBOUND RED LINE TRACK WITH 115RE JOINTED RAIL ON WB FAST LANE.



PHASE 2

PHASE 2

1. DURING TRACK OUTAGE CUT EXISTING OUTBOUND RED LINE TRACK AT BOTH ENDS AND THROW TO THE NEW TEMPORARY SHOOFLY TRACK IN SEVERAL INCREMENTS, MAINTAINING HORIZONTAL AND VERTICAL ALIGNMENT SUFFICIENT TO ALLOW 25 MPH OPERATIONS ON BOSTON SIDE AND 40 MPH ON CAMBRIDGE SIDE.
2. RELOCATE AND CONNECT CONTACT RAIL AND SIGNAL.
3. ON SEPARATE TRACK OUTAGE, REPEAT STEPS 1 AND 2 FOR INBOUND TRACK, RE-LOCATING IT ON TO EXISTING OUTBOUND TRACK.



PHASE 3

PHASE 3

1. DEMOLISH AND REMOVE EXISTING INBOUND TRACK AND DECK STRUCTURE FROM SPANS 4 TO 13. REPAIR STEEL SUPERSTRUCTURE AND INSTALL NEW PRECAST DECK BELOW INBOUND TRACKS.
2. REBUILD INBOUND TRACK ON NEW PRECAST DECK USING 115RE CWR.

ISSUE	DATE	DESCRIPTION	BY	CHKD	APP

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Boston, MA. 02108-1906

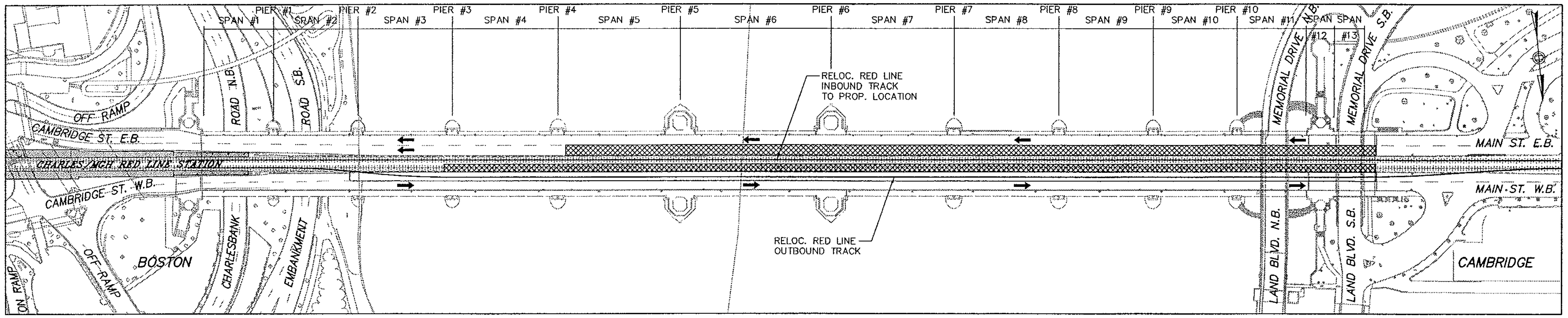
HOR. SCALE IN FEET
0 100 250 500

BOSTON / CAMBRIDGE
ROUTE 3 – LONGFELLOW BRIDGE
BRIDGE No. B-16-009 = C-01-002 (4F0)

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	XXX	200X	35	59

PROJECT FILE NO. XXXXXX

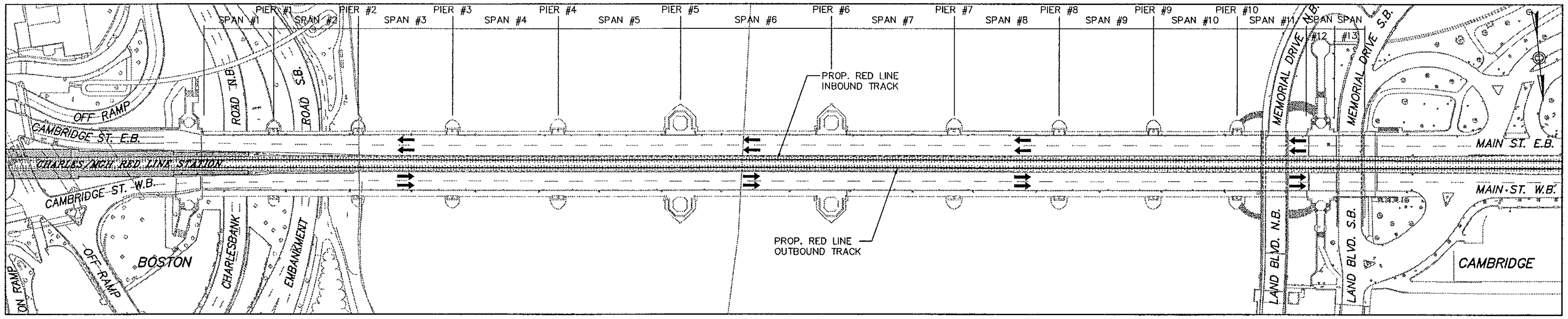
CONSTRUCTION STAGES
STAGE 4
SHEET 4 OF 4



PHASE 1

PHASE 1

1. DURING TRACK OUTAGE CUT TEMPORARY RELOCATED INBOUND RED LINE TRACK AT BOTH ENDS AND THROW TO THE NEW INBOUND TRACK BUILT IN THE EXISTING LOCATION. DO THIS IN SEVERAL INCREMENTS, MAINTAINING HORIZONTAL AND VERTICAL ALIGNMENT SUFFICIENT TO ALLOW 25 MPH OPERATIONS ON BOSTON SIDE AND 40 MPH ON CAMBRIDGE SIDE.
2. RELOCATE AND CONNECT CONTACT RAIL AND SIGNAL.
3. THE OUTBOUND TRACK ON SHOOFLY ALIGNMENT ON WB FAST LANE REMAINS IN SAME LOCATION.
4. WORK BETWEEN THE OUTBOUND SHOOFLY TRACK AND THE NEW INBOUND TRACK (IN EXISTING LOCATION) DURING NON-REVENUE SERVICE HOURS, TO DEMOLISH AND REMOVE TRACK AND DECK STRUCTURE OF THE EXISTING OUTBOUND TRACK FROM SPAN 4 TO 13.
5. REPAIR STEEL SUPERSTRUCTURE AND INSTALL NEW PRECAST DECK IN EXISTING OUTBOUND TRACK LOCATION FROM SPAN 4 THRU 13.
6. REBUILD OUTBOUND TRACK ON NEW PRECAST DECK FROM SPANS 4 THRU 13 USING 115RE CWR.



PHASE 2

PHASE 2

1. DURING TRACK OUTAGE, CUT TEMPORARY OUTBOUND SHOOFLY TRACK AT BOTH ENDS AND THROW TO THE NEW OUTBOUND TRACK BUILT IN THE EXISTING LOCATION. DO THIS IN SEVERAL INCREMENTS, MAINTAINING HORIZONTAL AND VERTICAL ALIGNMENT SUFFICIENT TO ALLOW 25 MPH OPERATIONS ON BOSTON SIDE AND 40 MPH ON CAMBRIDGE SIDE.
2. RELOCATE AND CONNECT CONTACT RAIL AND SIGNAL.
3. DEMOLISH AND REMOVE TEMPORARY SHOOFLY TRACK.
4. COMPLETE ROAD SURFACE IN WB FAST LANE OVER LENGTH OF SHOOFLY.

ISSUE	DATE	DESCRIPTION	BY	CHKD	APP

JACOBS
Two Center Plaza
Boston, MA. 02108-1906

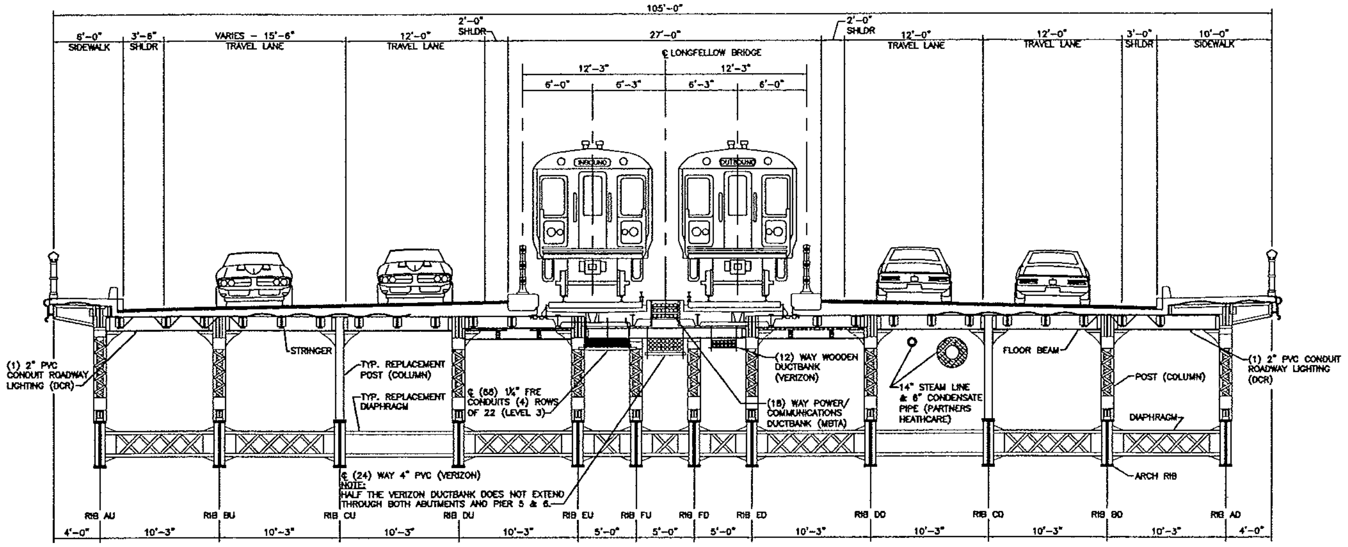
HOR. SCALE IN FEET
0 100 250 500

BOSTON / CAMBRIDGE
ROUTE 3 – LONGFELLOW BRIDGE
BRIDGE No. B-16-009 = C-01-002 (4FO)

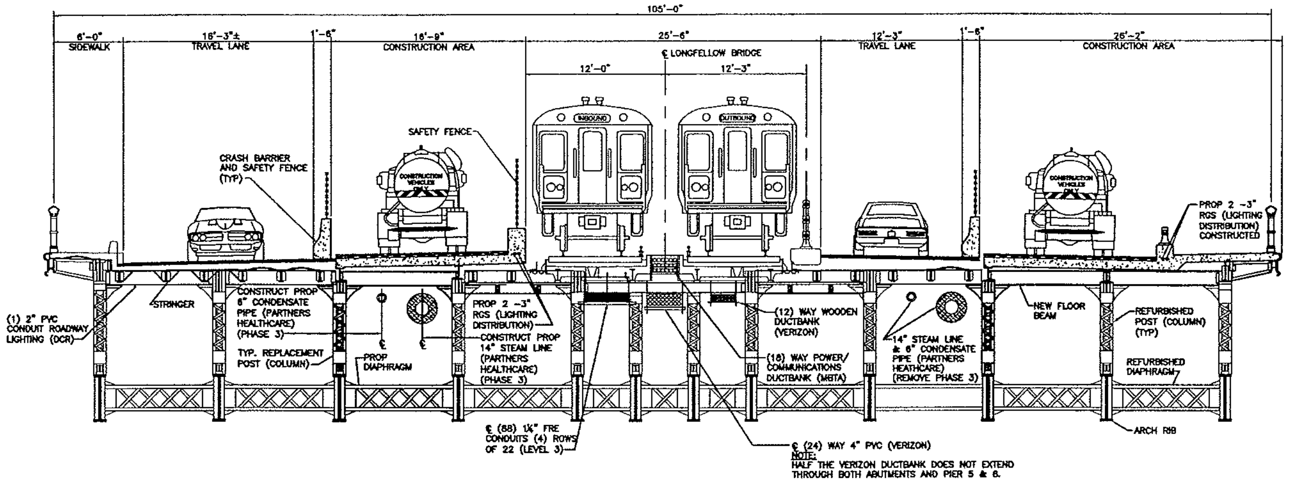
STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	XXX	200X		

PROJECT FILE NO. XXXXXX

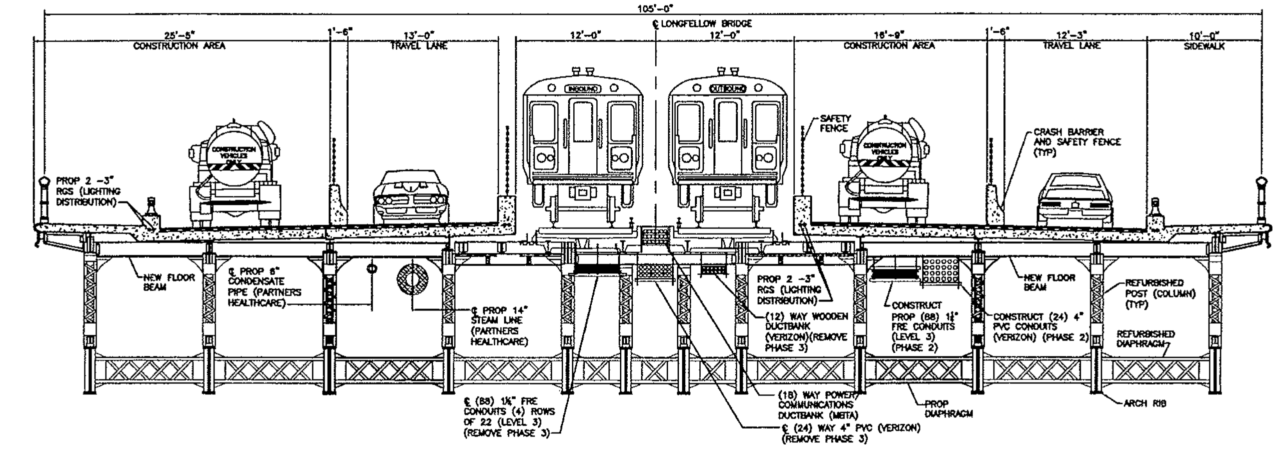
CONSTRUCTION STAGING
CROSS SECTIONS
SPAN 1–11


105'–0"
6'–0" SIDEWALK
3'–6" SHLDR
VARIES – 15'–6" TRAVEL LANE
12'–0" TRAVEL LANE
2'–0" SHLDR
27'–0"
℄ LONGFELLOW BRIDGE
12'–3"
12'–3"
6'–0"
6'–3"
6'–3"
6'–0"
2'–0" SHLDR
12'–0" TRAVEL LANE
12'–0" TRAVEL LANE
3'–0" SHLDR
10'–0" SIDEWALK
INBOUND
OUTBOUND
(1) 2" PVC CONDUIT ROADWAY LIGHTING (DCR)
STRINGER
TYP. REPLACEMENT POST (COLUMN)
TYP. REPLACEMENT DIAPHRAGM
℄ (88) 1¼" FRE CONDUITS (4) ROWS OF 22 (LEVEL 3)
(12) WAY WOODEN DUCTBANK (VERIZON)
(18) WAY POWER/ COMMUNICATIONS DUCTBANK (MBTA)
14" STEAM LINE & 6" CONDENSATE PIPE (PARTNERS HEATHCARE)
FLOOR BEAM
POST (COLUMN)
DIAPHRAGM
ARCH RIB
(1) 2" PVC CONDUIT ROADWAY LIGHTING (DCR)
℄ (24) WAY 4" PVC (VERIZON)
NOTE:
HALF THE VERIZON DUCTBANK DOES NOT EXTEND THROUGH BOTH ABUTMENTS AND PIER 5 & 6.
RIB AU
RIB BU
RIB CU
RIB DU
RIB EU
RIB FU
RIB FD
RIB ED
RIB DD
RIB CD
RIB BD
RIB AD
4'–0"
10'–3"
10'–3"
10'–3"
10'–3"
5'–0"
5'–0"
5'–0"
10'–3"
10'–3"
10'–3"
10'–3"
4'–0"

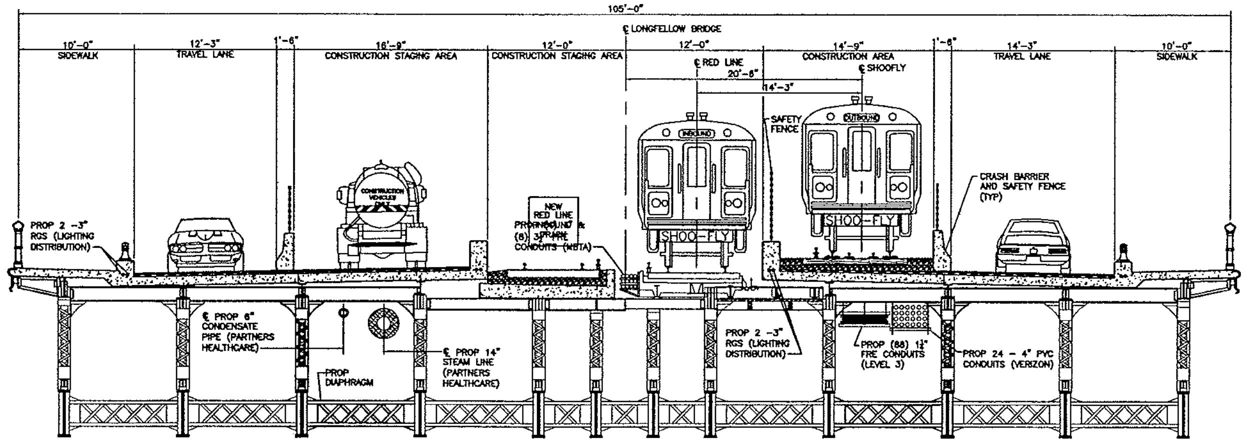
EXISTING TYPICAL SECTION
(LOOKING TOWARDS CAMBRIDGE)


105'–0"
6'–0" SIDEWALK
16'–3"± TRAVEL LANE
1'–6"
16'–9" CONSTRUCTION AREA
25'–6"
℄ LONGFELLOW BRIDGE
12'–0"
12'–3"
12'–3" TRAVEL LANE
1'–6"
26'–2" CONSTRUCTION AREA
INBOUND
OUTBOUND
SAFETY FENCE
CRASH BARRIER AND SAFETY FENCE (TYP)
CONSTRUCTION VEHICLES ONLY
PROP 2 –3" RGS (LIGHTING DISTRIBUTION) CONSTRUCTED
(1) 2" PVC CONDUIT ROADWAY LIGHTING (DCR)
STRINGER
CONSTRUCT PROP 6" CONDENSATE PIPE (PARTNERS HEALTHCARE) (PHASE 3)
TYP. REPLACEMENT POST (COLUMN)
PROP DIAPHRAGM
PROP 2 –3" RGS (LIGHTING DISTRIBUTION)
CONSTRUCT PROP 14" STEAM LINE (PARTNERS HEALTHCARE) (PHASE 3)
(12) WAY WOODEN DUCTBANK (VERIZON)
(18) WAY POWER/ COMMUNICATIONS DUCTBANK (MBTA)
14" STEAM LINE & 6" CONDENSATE PIPE (PARTNERS HEATHCARE) (REMOVE PHASE 3)
NEW FLOOR BEAM
REFURBISHED POST (COLUMN) (TYP)
REFURBISHED DIAPHRAGM
ARCH RIB
℄ (88) 1¼" FRE CONDUITS (4) ROWS OF 22 (LEVEL 3)
℄ (24) WAY 4" PVC (VERIZON)
NOTE:
HALF THE VERIZON DUCTBANK DOES NOT EXTEND THROUGH BOTH ABUTMENTS AND PIER 5 & 6.

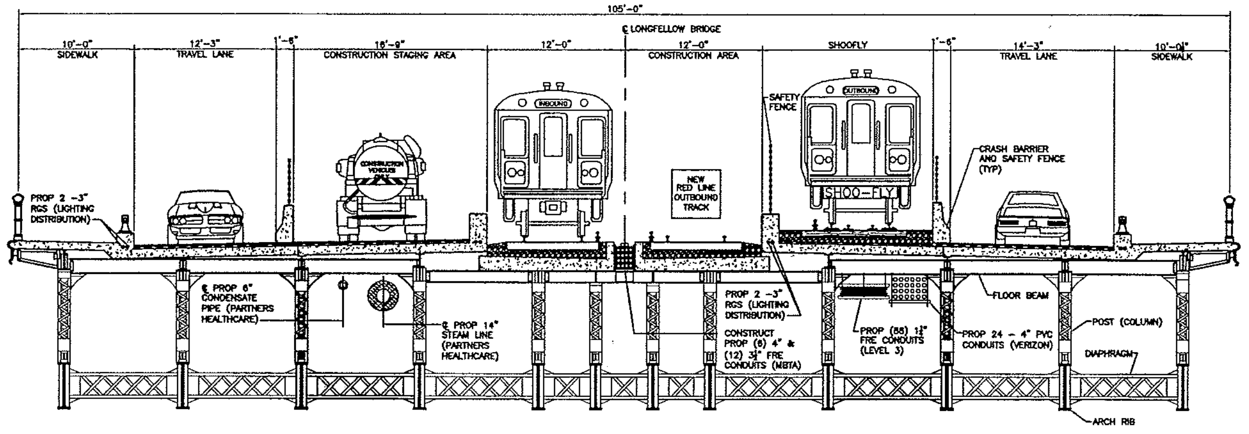
TYPICAL SECTION – STAGE 1
(LOOKING TOWARDS CAMBRIDGE)


105'–0"
℄ LONGFELLOW BRIDGE
25'–5" CONSTRUCTION AREA
1'–6"
13'–0" TRAVEL LANE
12'–0"
12'–0"
16'–9" CONSTRUCTION AREA
1'–6"
12'–3" TRAVEL LANE
10'–0" SIDEWALK
INBOUND
OUTBOUND
CONSTRUCTION VEHICLES ONLY
PROP 2 –3" RGS (LIGHTING DISTRIBUTION)
SAFETY FENCE
CRASH BARRIER AND SAFETY FENCE (TYP)
NEW FLOOR BEAM
℄ PROP 6" CONDENSATE PIPE (PARTNERS HEALTHCARE)
℄ PROP 14" STEAM LINE (PARTNERS HEALTHCARE)
PROP 2 –3" RGS (LIGHTING DISTRIBUTION)
(12) WAY WOODEN DUCTBANK (VERIZON)(REMOVE PHASE 3)
CONSTRUCT PROP (88) 1½" FRE CONDUITS (LEVEL 3) (PHASE 2)
CONSTRUCT (24) 4" PVC CONDUITS (VERIZON) (PHASE 2)
NEW FLOOR BEAM
REFURBISHED POST (COLUMN) (TYP)
REFURBISHED DIAPHRAGM
℄ (88) 1¼" FRE CONDUITS (4) ROWS OF 22 (LEVEL 3) (REMOVE PHASE 3)
(18) WAY POWER/ COMMUNICATIONS DUCTBANK (MBTA)
℄ (24) WAY 4" PVC (VERIZON) (REMOVE PHASE 3)
PROP DIAPHRAGM
ARCH RIB

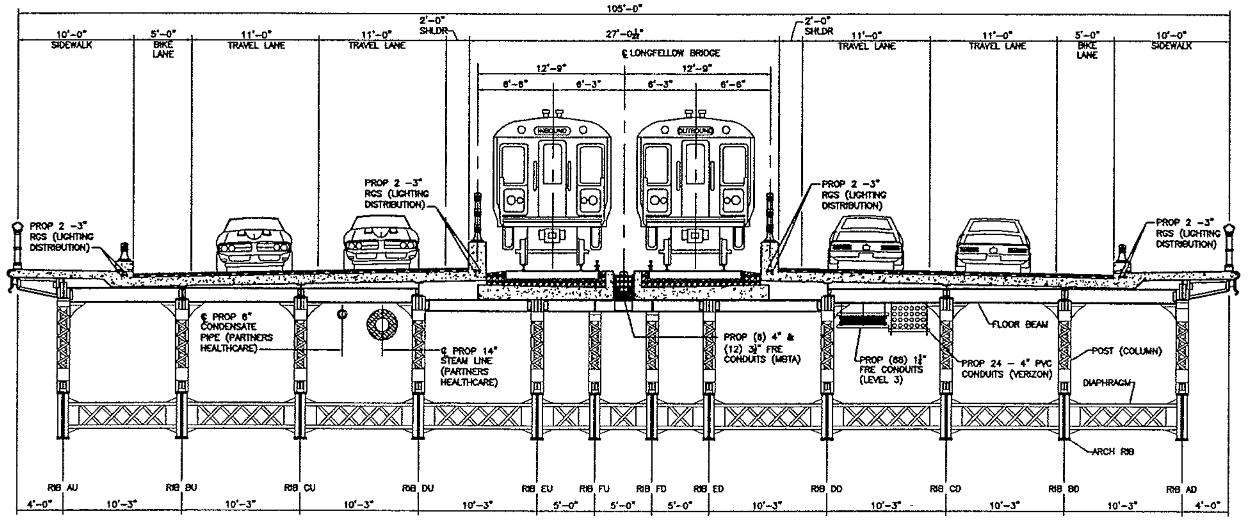
TYPICAL SECTION – STAGE 2
(LOOKING TOWARDS CAMBRIDGE)


105'–0"
℄ LONGFELLOW BRIDGE
10'–0" SIDEWALK
12'–3" TRAVEL LANE
1'–6"
16'–9" CONSTRUCTION STAGING AREA
12'–0" CONSTRUCTION STAGING AREA
12'–0"
℄ RED LINE
20'–6"
14'–3"
14'–9" CONSTRUCTION AREA
℄ SHOOFLY
1'–6"
14'–3" TRAVEL LANE
10'–0" SIDEWALK
INBOUND
OUTBOUND
SHOO-FLY
SHOO-FLY
NEW RED LINE INBOUND TRACK
SAFETY FENCE
CRASH BARRIER AND SAFETY FENCE (TYP)
PROP 2 –3" RGS (LIGHTING DISTRIBUTION)
CONSTRUCTION VEHICLES ONLY
PROP (6) 4" & (8) 3½" FRE CONDUITS (MBTA)
℄ PROP 6" CONDENSATE PIPE (PARTNERS HEALTHCARE)
PROP DIAPHRAGM
℄ PROP 14" STEAM LINE (PARTNERS HEALTHCARE)
PROP 2 –3" RGS (LIGHTING DISTRIBUTION)
PROP (88) 1½" FRE CONDUITS (LEVEL 3)
PROP 24 – 4" PVC CONDUITS (VERIZON)

TYPICAL SECTION – STAGE 3
(LOOKING TOWARDS CAMBRIDGE)


105'–0"
℄ LONGFELLOW BRIDGE
10'–0" SIDEWALK
12'–3" TRAVEL LANE
1'–6"
16'–9" CONSTRUCTION STAGING AREA
12'–0"
12'–0" CONSTRUCTION AREA
SHOOFLY
1'–6"
14'–3" TRAVEL LANE
10'–0½" SIDEWALK
INBOUND
OUTBOUND
SHOO-FLY
NEW RED LINE OUTBOUND TRACK
SAFETY FENCE
CRASH BARRIER AND SAFETY FENCE (TYP)
PROP 2 –3" RGS (LIGHTING DISTRIBUTION)
CONSTRUCTION VEHICLES ONLY
℄ PROP 6" CONDENSATE PIPE (PARTNERS HEALTHCARE)
℄ PROP 14" STEAM LINE (PARTNERS HEALTHCARE)
PROP 2 –3" RGS (LIGHTING DISTRIBUTION)
CONSTRUCT PROP (6) 4" & (12) 3½" FRE CONDUITS (MBTA)
PROP (88) 1½" FRE CONDUITS (LEVEL 3)
PROP 24 – 4" PVC CONDUITS (VERIZON)
FLOOR BEAM
POST (COLUMN)
DIAPHRAGM
ARCH RIB

TYPICAL SECTION – STAGE 4
(LOOKING TOWARDS CAMBRIDGE)



PROPOSED TYPICAL SECTION
(LOOKING TOWARDS CAMBRIDGE)

ISSUE	DATE	DESCRIPTION	BY	CHKD	APP

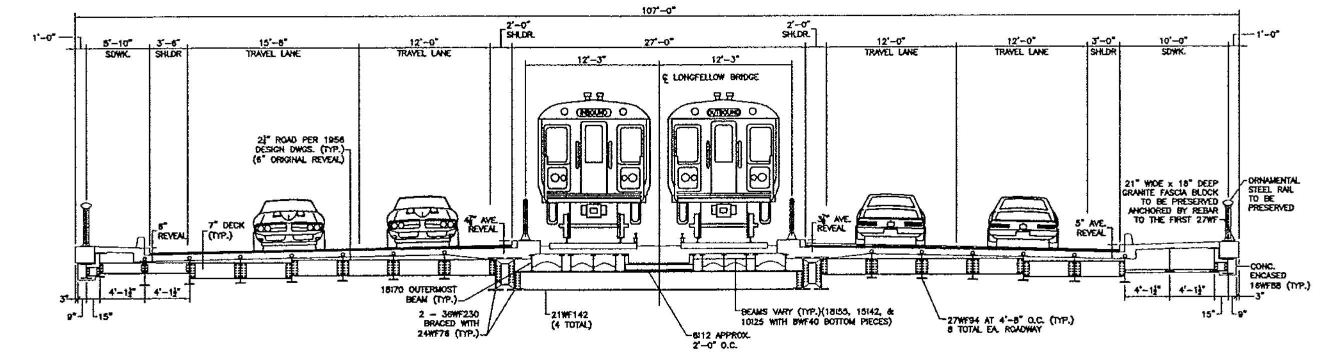
JACOBS
Two Center Plaza
Boston, MA. 02108–1906

F:\Proj\E2X24200 Longfellow\700 CADD & PDF\709st\Structural-Staging.dwg (Type Study Staging X-sect) Plotted Sep 21, 2006 at 4:33pm by gallagef

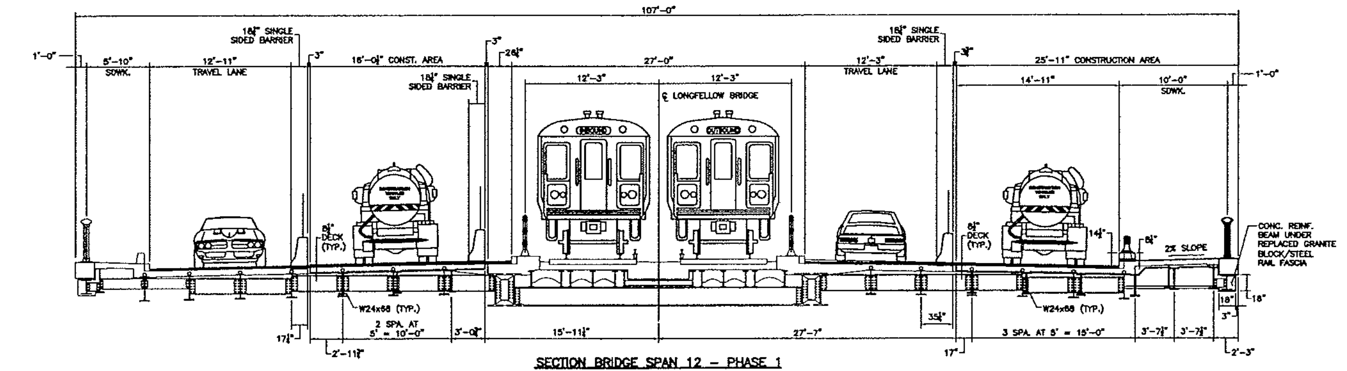
BOSTON / CAMBRIDGE
ROUTE 3 – LONGFELLOW BRIDGE
BRIDGE No. B-16-009 = C-01-002 (4FO)

STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	XXX	200X		
PROJECT FILE NO. XXXXXX				

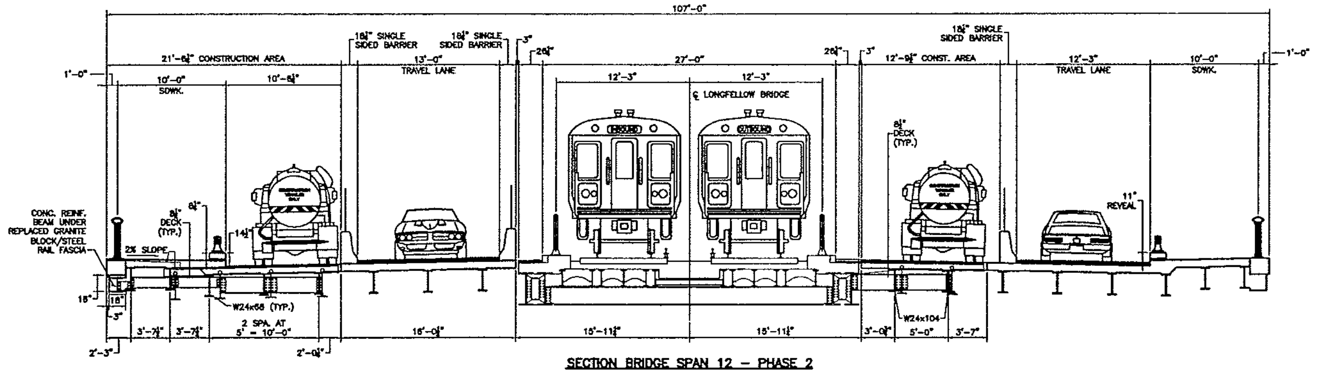
CONSTRUCTION STAGING
CROSS SECTIONS
SPAN 12


107'-0"
1'-0"
5'-10" SDWK.
3'-6" SHLDR.
15'-8" TRAVEL LANE
12'-0" TRAVEL LANE
2'-0" SHLDR.
27'-0"
12'-3"
℄ LONGFELLOW BRIDGE
INBOUND
OUTBOUND
2'-0" SHLDR.
12'-0" TRAVEL LANE
12'-0" TRAVEL LANE
3'-0" SHLDR.
10'-0" SDWK.
2½" ROAD PER 1956 DESIGN DWGS. (TYP.) (6" ORIGINAL REVEAL)
21" WIDE x 18" DEEP GRANITE FASCIA BLOCK TO BE PRESERVED ANCHORED BY REBAR TO THE FIRST 27WF
ORNAMENTAL STEEL RAIL TO BE PRESERVED
5" REVEAL
7" DECK (TYP.)
4" AVE. REVEAL
5" AVE. REVEAL
CONC. ENCASED 16WF88 (TYP.)
18I70 OUTERMOST BEAM (TYP.)
2 – 36WF230 BRACED WITH 24WF76 (TYP.)
21WF142 (4 TOTAL)
8I12 APPROX. 2'-0" O.C.
BEAMS VARY (TYP.)(18I55, 15I42, & 10I25 WITH 8WF40 BOTTOM PIECES)
27WF94 AT 4'-8" O.C. (TYP.) 6 TOTAL EA. ROADWAY
4'-1½"
15"
9"
3"

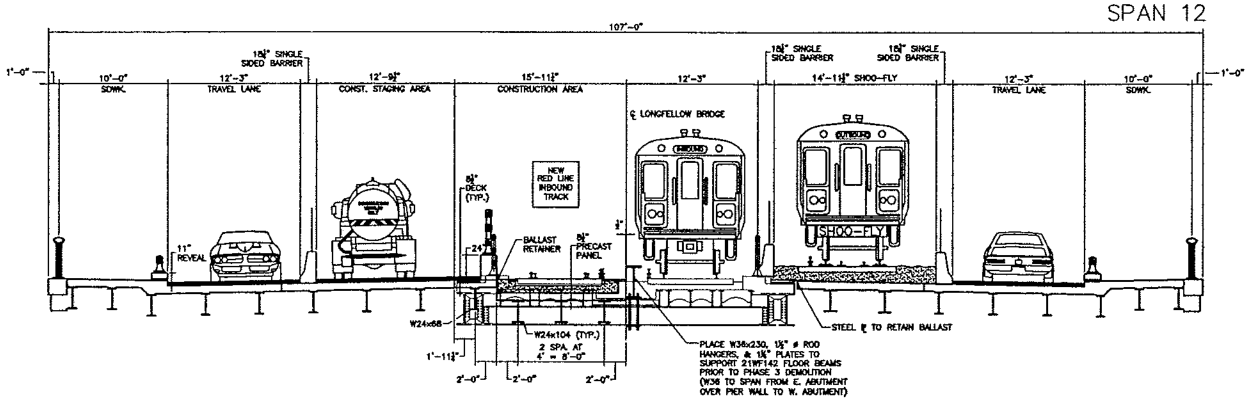
EXISTING SECTION BRIDGE SPAN 12
(LOOKING TOWARD CAMBRIDGE)
SCALE: ⅛" = 1'-0"



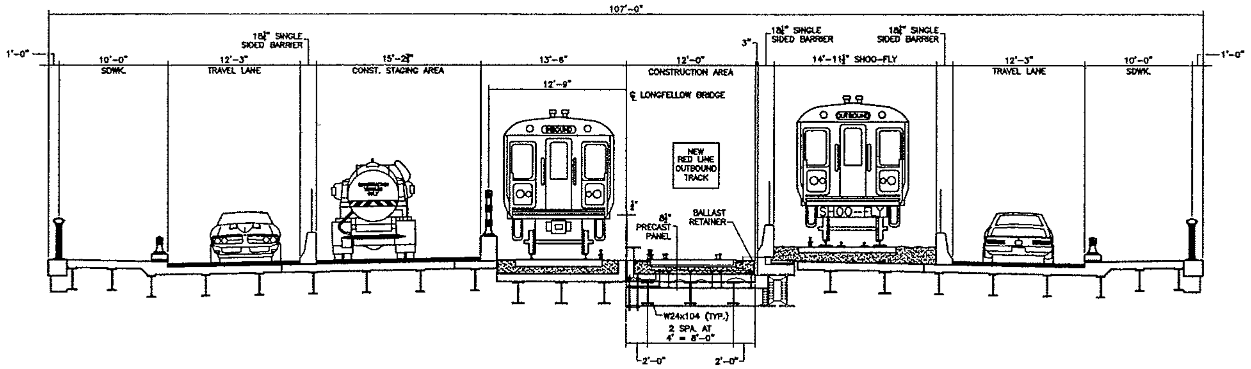
SECTION BRIDGE SPAN 12 – PHASE 1
(LOOKING TOWARD CAMBRIDGE)
SCALE: ⅛" = 1'-0"



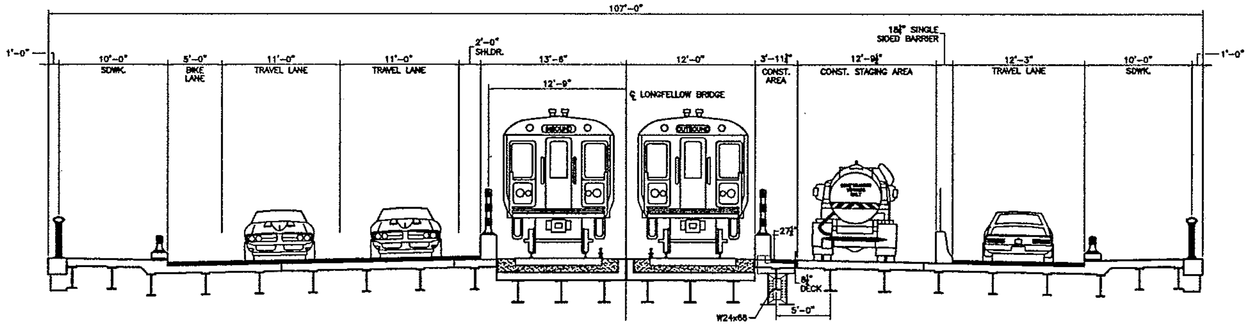
SECTION BRIDGE SPAN 12 – PHASE 2
(LOOKING TOWARD CAMBRIDGE)
SCALE: ⅛" = 1'-0"


107'-0"
1'-0"
10'-0" SDWK.
18¾" SINGLE SIDED BARRIER
12'-3" TRAVEL LANE
12'-9¾" CONST. STAGING AREA
15'-11½" CONSTRUCTION AREA
12'-3"
℄ LONGFELLOW BRIDGE
18¾" SINGLE SIDED BARRIER
14'-11½" SHOO-FLY
12'-3" TRAVEL LANE
10'-0" SDWK.
NEW RED LINE INBOUND TRACK
OUTBOUND
SHOO-FLY
11" REVEAL
8½" DECK (TYP.)
BALLAST RETAINER
8½" PRECAST PANEL
W24x68
W24x104 (TYP.)
2 SPA. AT 4' = 8'-0"
STEEL ℙ TO RETAIN BALLAST
PLACE W36x230, 1⅛" ∅ ROD HANGERS, & 1⅛" PLATES TO SUPPORT 21WF142 FLOOR BEAMS PRIOR TO PHASE 3 DEMOLITION (W36 TO SPAN FROM E. ABUTMENT OVER PIER WALL TO W. ABUTMENT)
2'-0"
1'-11½"

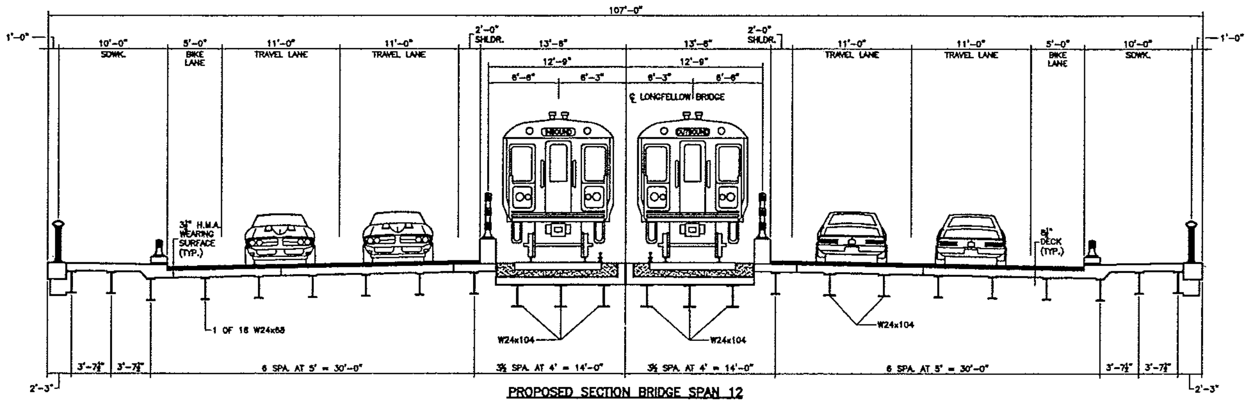
SECTION BRIDGE SPAN 12 – PHASE 3
(LOOKING TOWARD CAMBRIDGE)
SCALE: ⅛" = 1'-0"



SECTION BRIDGE SPAN 12 – PHASE 4
(LOOKING TOWARD CAMBRIDGE)
SCALE: ⅛" = 1'-0"



SECTION BRIDGE SPAN 12 – PHASE 5
(LOOKING TOWARD CAMBRIDGE)
SCALE: ⅛" = 1'-0"



PROPOSED SECTION BRIDGE SPAN 12
(LOOKING TOWARD CAMBRIDGE)
SCALE: ⅛" = 1'-0"

F:\Proj\E2X24200 Longfellow\700 CADD & PDF\700str (C&C)\06-08-18 Staging.dwg (span 12) Plotted Sep 21, 2006 at 4:26pm by gallager

ISSUE	DATE	DESCRIPTION	BY	CHKD	APP

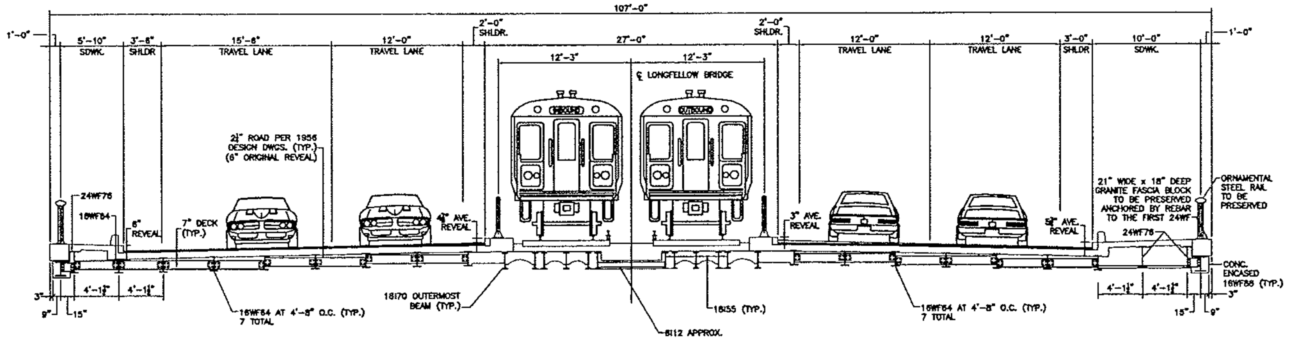
JACOBS
Two Center Plaza
Boston, MA. 02108-1906

BOSTON / CAMBRIDGE
ROUTE 3 – LONGFELLOW BRIDGE
BRIDGE No. B-16-009 = C-01-002 (4FO)

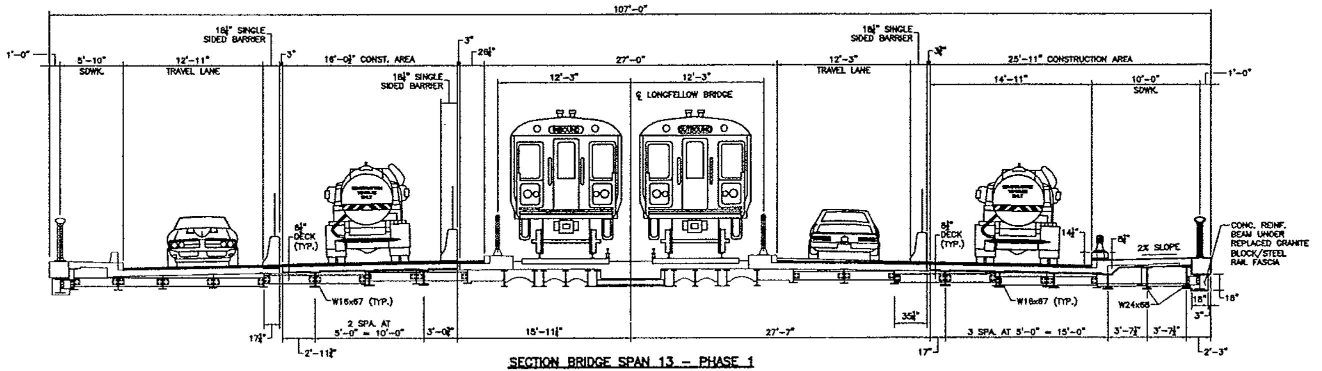
STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MASS.	XXX	200X		

PROJECT FILE NO. XXXXXX

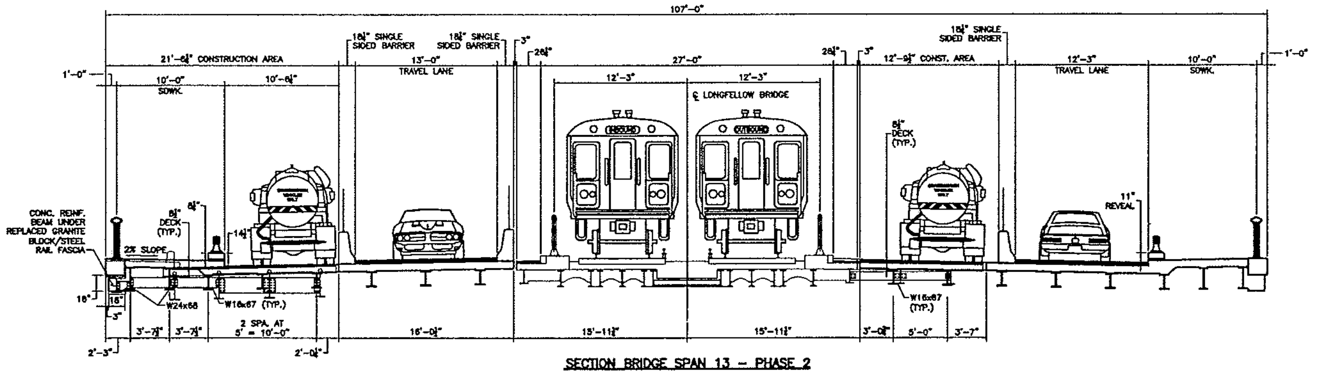
CONSTRUCTION STAGING
CROSS SECTIONS
SPAN 13



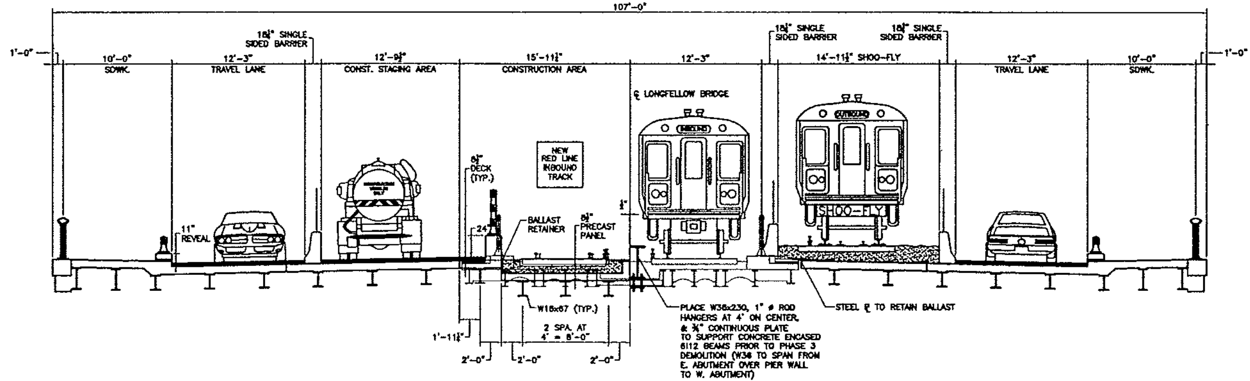
EXISTING SECTION BRIDGE SPAN 13
(LOOKING TOWARD CAMBRIDGE)
SCALE: ⅛" = 1'-0"



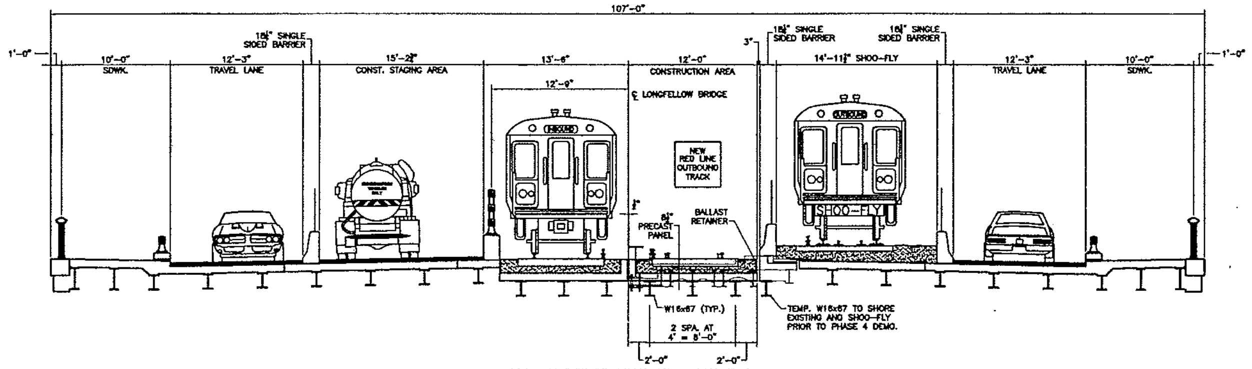
SECTION BRIDGE SPAN 13 – PHASE 1
(LOOKING TOWARD CAMBRIDGE)
SCALE: ⅛" = 1'-0"



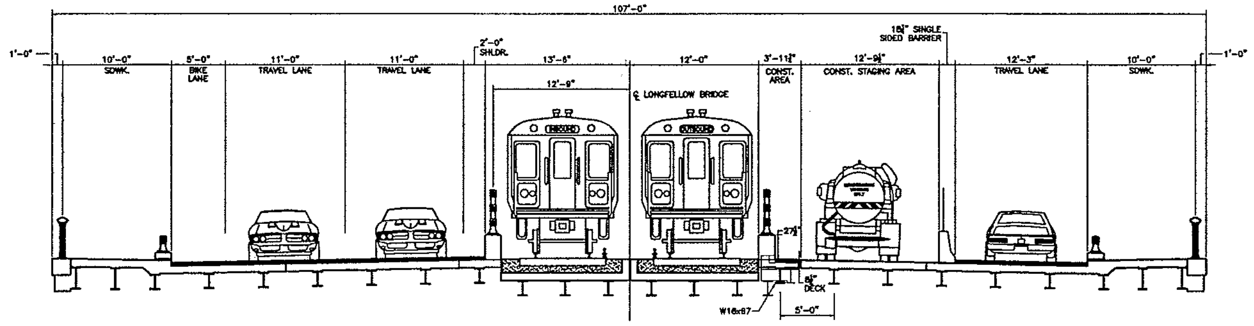
SECTION BRIDGE SPAN 13 – PHASE 2
(LOOKING TOWARD CAMBRIDGE)
SCALE: ⅛" = 1'-0"


107'-0"
1'-0"
10'-0" SDWK.
18¾" SINGLE SIDED BARRIER
12'-3" TRAVEL LANE
12'-9¾" CONST. STAGING AREA
15'-11¾" CONSTRUCTION AREA
12'-3"
℄ LONGFELLOW BRIDGE
18¾" SINGLE SIDED BARRIER
18¾" SINGLE SIDED BARRIER
14'-11¾" SHOO-FLY
12'-3" TRAVEL LANE
10'-0" SDWK.
1'-0"
NEW RED LINE INBOUND TRACK
8¼" DECK (TYP.)
11" REVEAL
24"
BALLAST RETAINER
8¼" PRECAST PANEL
SHOO-FLY
W16x67 (TYP.)
2 SPA. AT 4' = 8'-0"
1'-11¾"
2'-0"
2'-0"
2'-0"
PLACE W36x230, 1" ⌀ ROD HANGERS AT 4' ON CENTER, & ¾" CONTINUOUS PLATE TO SUPPORT CONCRETE ENCASED 6I12 BEAMS PRIOR TO PHASE 3 DEMOLITION (W36 TO SPAN FROM E. ABUTMENT OVER PIER WALL TO W. ABUTMENT)
STEEL ℄ TO RETAIN BALLAST

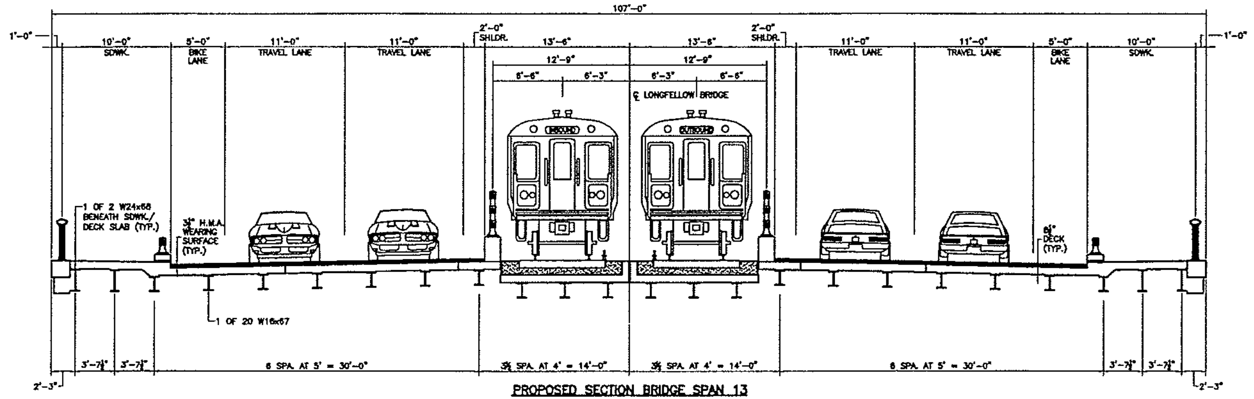
SECTION BRIDGE SPAN 13 – PHASE 3
(LOOKING TOWARD CAMBRIDGE)
SCALE: ⅛" = 1'-0"



SECTION BRIDGE SPAN 13 – PHASE 4
(LOOKING TOWARD CAMBRIDGE)
SCALE: ⅛" = 1'-0"



SECTION BRIDGE SPAN 13 – PHASE 5
(LOOKING TOWARD CAMBRIDGE)
SCALE: ⅛" = 1'-0"



PROPOSED SECTION BRIDGE SPAN 13
(LOOKING TOWARD CAMBRIDGE)
SCALE: ⅛" = 1'-0"

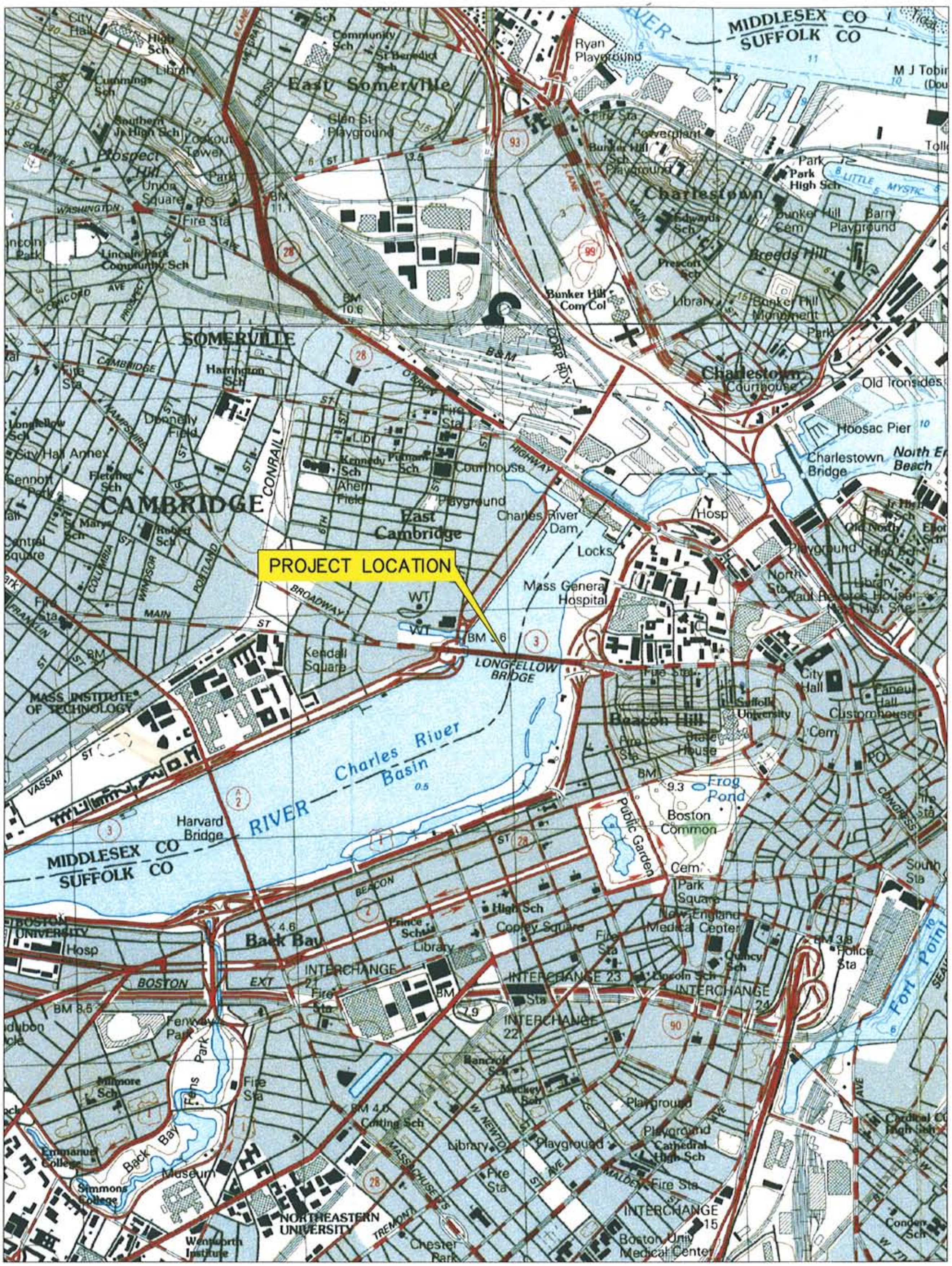
ISSUE	DATE	DESCRIPTION	BY	CHKD	APP

JACOBS
Two Center Plaza
Boston, MA. 02108–1906

F:\Proj\E2X24200 Longfellow\700 CADD & PDF\709str (C&C)\'06-08-18 Staging.dwg (span 13) Plotted Sep 21, 2006 at 4:25pm by gallagef

Attachment 3

Original USGS Map Showing the Project Location



Longfellow Bridge Rehabilitation and Restoration Project

Location Map

N

0 ¼ ½ ¾ 1

SCALE IN MILES

Attachment 4

Circulation List

Longfellow Bridge Restoration Project
Boston and Cambridge, Massachusetts

Circulation List for Environmental Notification Form
(In Accordance with 301 CMR 11.16(2) “Circulation of ENF”)

MEPA Office (2 Copies)

Secretary of Environmental Affairs
Attention: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

Agency and Other Reviewers

1. Executive Office of Environmental Affairs – Policy Director

Executive Office of Environmental Affairs
Attention: Undersecretary for Policy
100 Cambridge Street, Suite 900
Boston, MA 02114

2a. Department of Environmental Protection – Boston Office

Department of Environmental Protection
Attention: MEPA Coordinator
One Winter Street
Boston, MA 02108

2b. Department of Environmental Protection – Regional Office

Department of Environmental Protection
Northeast Region
Attention: MEPA Coordinator
205B Lowell Street
Wilmington, MA 01887

2c. Department of Environmental Protection – Chapter 91 Program

Department of Environmental Protection
Chapter 91 Program
One Winter Street
Boston, MA 02108

2d. Department of Environmental Protection – Surface Water Program

Department of Environmental Protection
Surface Water Program
One Winter Street
Boston, MA 02108

2e. Department of Environmental Protection – Air Quality Program

Department of Environmental Protection
Air Quality Program
One Winter Street
Boston, MA 02108

2f. Department of Environmental Protection – Other

No distribution. There is no other program of the Department of Environmental Protection for which action related to this project is thought to be required.

3. Executive Office of Transportation and Construction

Executive Office of Transportation and Construction
Attention: Environmental Reviewer
10 Park Plaza, Room 3510
Boston, MA 02116-3969

4a. Massachusetts Highway Department – Public/Private Development Unit

Massachusetts Highway Department
Public/Private Development Unit
10 Park Plaza
Boston, MA 02116

4b. Massachusetts Highway Department – District Office

Massachusetts Highway Department
District 4
Attention: MEPA Coordinator
519 Appleton Street
Arlington, MA 02476

5. Massachusetts Aeronautics Commission

Massachusetts Aeronautics Commission
Attention: MEPA Coordinator
10 Park Plaza, Room 6620
Boston, MA 02116-3966

6. Massachusetts Historical Commission

Massachusetts Historical Commission
The Massachusetts Archives Building
220 Morrissey Boulevard
Boston, MA 02125

7. Regional Planning Agency

Metropolitan Area Planning Council
60 Temple Place, 6th Floor
Boston, MA 02111

8a. Office of the Mayor - Boston

Thomas M. Menino, Mayor of Boston
Office of the Mayor
1 City Hall Plaza
Boston, MA 02201

8b. Office of the Mayor – Cambridge

E. Denise Simmons, Mayor of Cambridge
Office of the Mayor
Cambridge City Hall
795 Massachusetts Avenue
Cambridge, MA 02139

8c. Planning Department - Boston

Boston Redevelopment Authority
One City Hall Square, 9th Floor
Boston, MA 02201

8d. Planning Department - Cambridge

City of Cambridge
Department of Community Development
344 Broadway
Cambridge, MA 02139

8e. Conservation Commission – Boston

Boston Conservation Commission
Attention: Chris Busch, Executive Secretary
City of Boston, The Environment Department
Boston City Hall, Room 805
Boston, MA 02201

8f. Conservation Commission - Cambridge

Jennifer Wright, Director
Conservation Commission
City of Cambridge
344 Broadway
Cambridge, MA 02139

8g. Department of Health – Boston

Boston Public Health Commission
1010 Massachusetts Avenue, 2nd Floor
Boston, MA 02118

8h. Department of Health – Cambridge

Cambridge Public Health Department
119 Windsor Street
Cambridge, MA 02139

9a. Massachusetts Coastal Zone Management Office

Massachusetts Coastal Zone Management Office
Attention: Project Review Coordinator
251 Causeway Street, Suite 800
Boston, MA 02114-2136

9b. Division of Marine Fisheries

Division of Marine Fisheries Headquarters
251 Causeway Street, Suite 400
Boston, MA 02114-2152

10. Department of Food and Agriculture

No distribution. The project site is in an urban area and has not been in agricultural use for at least the last fifteen years.

11. Natural Heritage and Endangered Species Program

No distribution. The project site does not contain designated significant or estimated habitat or priority sites of endangered or threatened species or species of special concern in accordance with the Massachusetts Endangered Species Act.

12. Department of Conservation and Recreation

Department of Conservation and Recreation
251 Causeway Street
Boston, MA 02114

13. Department of Public Health

Commonwealth of Massachusetts
Department of Public Health
250 Washington Street
Boston, MA 02108-4619

14a. Department of Telecommunications and Energy

Commonwealth of Massachusetts
Department of Telecommunications and Energy
One South Station
Boston, MA 02110

14b. Energy Facilities Siting Board

No distribution. The project is not subject to review by the Energy Facilities Siting Board.

15. Massachusetts Water Resources Authority

Massachusetts Water Resources Authority
Attention: MEPA Coordinator
100 First Avenue
Charlestown Navy Yard
Boston, MA 02129

16. Massachusetts Bay Transportation Authority

Massachusetts Bay Transportation Authority
Attention: MEPA Coordinator
10 Park Plaza, 6th Floor
Boston, MA 02216-3966

17. Other Agencies and Reviewers

Historic Preservation Issues

City of Boston
Environment Department
Boston City Hall, Room 805
1 City Hall Plaza
Boston, MA 02201

City of Boston
Boston Landmarks Commission
Boston City Hall, 8th Floor
1 City Hall Plaza
Boston, MA 02201

City of Boston
Beacon Hill Historic District Commission
Boston City Hall
1 City Hall Plaza
Boston, MA 02201

Cambridge Historical Commission
831 Massachusetts Avenue, 2nd Floor
Cambridge, MA 02139

Back Bay Architectural Commission
One City Hall Plaza, Room 805
Boston, MA 02201

Beacon Hill Architectural Commission
One City Hall Plaza, Room 805
Boston, MA 02201

Boston Preservation Alliance
45 School Street, Old City Hall
Boston, MA 02108

Preservation MASS
45 School Street, Old City Hall
Boston, MA 02108

Massachusetts Board of Underwater Archaeological Resources
251 Causeway Street, Number 800
Boston, MA 02114

Traffic Issues

Boston Transportation Department
Boston City Hall
1 City Hall Plaza
Boston, MA 02201

Cambridge Traffic, Parking, and Transportation Department
344 Broadway
Cambridge, MA 02139

Public Works Issues

Boston Public Works Department
Boston City Hall
1 City Hall Plaza
Boston, MA 02201

Boston Public Improvements Commission
Boston City Hall
1 City Hall Plaza
Boston, MA 02201

Cambridge Department of Public Works
147 Hampshire Street
Cambridge, MA 02139

Public Safety Issues

Emergency Management Division
Boston Fire Department
115 Southampton Street
Boston, MA 02118-2713

Cambridge Emergency Management Department
147 Hampshire Street
Cambridge, MA 02139

Boston Fire Department
Planning and Logistics Group
115 Southampton Street
Boston, MA 02118-2713

Cambridge Fire Department
491 Broadway
Cambridge, MA 02138

Boston Police Department
One Schroeder Plaza
Boston, MA 02120-2014

Cambridge Police Department
5 Western Avenue
Cambridge, MA 02139

Executive Office of Public Safety
One Ashburton Place, Suite 2133
Boston, MA 02108

Public Utilities Issues

Boston Water and Sewer Commission
980 Harrison Avenue
Boston, MA 02119

Cambridge Water Department
250 Fresh Pond Parkway
Cambridge, MA 02138

Bicycle User Issues

Massachusetts Bicycle Coalition
171 Milk Street
Boston, MA 02109

Bicycle Committee
Appalachian Mountain Club
5 Joy Street
Boston, MA 02108

Cambridge Bicycle Committee
344 Broadway
Cambridge, MA 02139

Pedestrian Issues

Walk Boston
Old City Hall
45 School Street
Boston, MA 02108

Livable Streets Alliance
70 Pacific Street
Cambridge, MA 02139

Cambridge Pedestrian Committee
Cambridge Community Development Department
344 Broadway
Cambridge, MA 02139

Boston Commission for Persons with Disabilities
Boston City Hall
1 City Hall Plaza, Room 966
Boston, MA 02201

Cambridge Disabilities Commission
51 Inman Street, 2nd Floor
Cambridge, MA 02139

Neighborhood Issues

Beacon Hill Civic Association
Hill House
74 Joy Street
Boston, MA 02114

Association of Cambridge Neighborhoods
44 Coolidge Hill Road
Cambridge, MA 02138

West End Civic Association
8 Whittier Place, Number 12F
Boston, MA 02114

The Charles River

Charles River Watershed Association
190 Park Road
Weston, MA 02493

Charles River Conservancy
c/o EF Education
EF Center Boston
One Education Street
Cambridge, MA 02141

Community Boating, Inc.
21 David Mugar Way
Boston, MA 02114

Charles River Yacht Club
PO Box 41034
Cambridge, MA 02141

Francis Charles, Sailing Master
MIT Sailing Pavilion
3 Ames Street
Cambridge, MA 02142

Charlesgate Yacht Club
20 Cambridge Parkway
Cambridge, MA 02142

Other Institutions, Organizations, and Agencies

Jean Elrick, Senior Vice President for Operations
Massachusetts General Hospital
55 Fruit Street
Boston, MA 02114

Robert Biggio, Vice President for Facilities
Massachusetts Eye and Ear Infirmary
243 Charles Street
Boston, MA 02114

Kelly Brown
Department of Facilities
Massachusetts Institute of Technology
77 Massachusetts Avenue, Building NE49-2100
Cambridge, MA 02139

Massachusetts Turnpike Authority
10 Park Plaza, Room 4160
Boston, MA 02116

Beacon Hill Business Association
66 Charles Street, Number 451
Boston, MA 02114

Boston Greenspace Alliance
32 Rutland Street, 2nd Floor
Boston, MA 02118

The Conservation Law Foundation
62 Summer Street
Boston, MA 02110

The Esplanade Association
10 Dern Street
Boston, MA 02114

Cambridge Redevelopment Authority
One Cambridge Center, 4th Floor
Cambridge, MA 02142

Officials

Senator Sonia Chang-Diaz
Massachusetts State House
Room 413-C
Boston, MA 02133

Senator Anthony Galluccio
Massachusetts State House
Room 213A
Boston, MA 02133

Representative Martha Walz
Massachusetts State House
Room 443
Boston, MA 02133

Representative Byron Rushing
Massachusetts State House
Room 481
Boston, MA 02133

Representative Alice Wolf
Massachusetts State House
Room 167
Boston, MA 02133

Councilor Michael P. Ross
Boston City Council
1 City Hall Plaza, 5th Floor
Boston, MA 02201

Boston City Council
Boston City Hall
1 City Hall Plaza, 5th Floor
Boston, MA 02201

Robert W. Healy, City Manager
Cambridge City Hall
795 Massachusetts Avenue
Cambridge, MA 02139

Cambridge City Council
City Hall, 2nd Floor
795 Massachusetts Avenue
Cambridge, MA 02139

Margaret Drury, City Clerk
Cambridge City Hall
795 Massachusetts Ave
Cambridge, MA 02139

Jonathan Lenicheck, Deputy District Director
Office of Congressman Mike Capuano
110 First Street
Cambridge, MA 02141

Libraries

The State Library of Massachusetts
Government Documents Librarian
State House, Room 341
Boston, MA 02133

Boston Public Library
Government Documents Department
700 Boylston Street
Boston, MA 02116

Boston Public Library
West End Branch
151 Cambridge Street
Boston, MA 02114

Cambridge Public Library
Central Square Branch
45 Pearl Street
Cambridge, MA 02139

Attachment 5

Bridge Inspection Timeline

Longfellow Bridge Inspection:

An assurance by The MassHighway Department and The Department of Conservation and Recreation of providing public safety for vehicular, pedestrian, bicycle, transit and waterway users was warranted by the Executive Office of Transportation.

Jacobs, Edwards, Kelcey Inc. (JEK) is nationally recognized bridge engineering firm certified in NBIS inspection standards and certified to rate complex bridge structures according to MHD and AASHTO guidelines.

An in depth NBIS inspection of the bridge structure commenced on August 20, 2007, as a precautionary reaction to the I35 tragedy in Minneapolis, Minnesota.

Each member of the deck, superstructure and supporting substructure was physically inspected and verified against existing information. The underside of the inspection procedure was conducted from barges located in the Charles River spans with barge mounted aerial inspection equipment. Roadway inspections were directed from man-lifts located on the roadway. The inspection was conducted over a period of 60 days concluding on November 20, 2007.

Members with critical section loss, and reduced load capacity were identified and forwarded to DCR for their maintenance repair procedures. DCR began implementation of repair procedures in September 2007.

A comprehensive Bridge Inspection Field Report consistent with National Bridge Inspection Standard (NBIS) was submitted to MassHighway and DCR on December 7, 2007.

The inspection report confirmed the bridge condition as being Structurally Deficient, with some members being classified as critical in nature warranting immediate attention to sustain transportation serviceability.

Inspection of railings and ornamental fascia elements determined the need to remove the casting to ensure public safety and reduce the loading demands being placed on the supporting sidewalk elements.

In addition the designer was directed to apply the measured deficiencies identified in the inspection and prepare a Load Rating Report to evaluate the existing structures' capacity to withstand service load demands.

In January 2008, a Draft Bridge Rating Report was submitted to MassHighway and DCR for review and to use as a tool to make recommendation for restricting vehicle in excess of the safe carrying capacity of the bridge. DCR implemented an early action by posting signs to restrict truck traffic from using left lanes in each direction.

Repairs of the critical deficiencies identified in August and September continued through December 2007. In January 2008, additional members were identified with the submission of the bridge rating report. DCR initiated additional corrective repair solutions in March 2008 and has been ongoing since.

An additional proof load testing of the sidewalk was performed in May 2008, to verify the sidewalks ability to withstand the pedestrian service load requirements. A model will be generated by the designer to analyze the retrieved data to identify if there are sidewalk deficiencies that may require implementation of sidewalk restrictions or additional structural sidewalk repairs.

By agreement with MassHighway and DCR, a supplemental inspection will be conducted to verify the repairs undertaken by DCR and rate the loading capacity of the repaired members. MassHighway will then direct the JEK to amend the Draft Rating Report and evaluate the necessity to maintain the lane restrictions currently posted.

Remedial repairs are expected to extend the operational service life of the structure an additional 8-10 years.

In May of 2008 a Value Engineering (VE) Seminar was conducted to identify potential cost and time savings techniques and also to identify ways of enhancing value while analyzing the functions of the project or specific aspects of the project.

A Life Cycle Cost Analysis was prepared in September 2008 incorporating some of the suggestions and recommendations during the VE Process. It was done to substantiate whether the recommendations for rehabilitations being brought forward were cost effective in comparison to replacement options. It was shown at the completion of this report that the rehabilitation option being recommended is a cost effective means to attain a Life Cycle of 75 years similar to that required of new steel. A White Paper was then prepared to evaluate various coating systems which would best ensure the rehabilitated steel members with periodic maintenance could be protected to serve normal loading conditions over the next 75 years without further decay to the existing steel members. Additional studies are being conducted to evaluate the condition of the existing steel members. Copies of these will be made available for review at Boston and Cambridge Planning Departments and Libraries.

Attachment 6

Architecture and Historic Preservation

ATTACHMENT 6

ARCHITECTURE AND HISTORIC PRESERVATION

The Longfellow Bridge is an icon – a powerful expression of metropolitan Boston's civic pride in the opening years of the 20th century. Its historical significance is expressed primarily in the dramatic appearance of its architectural envelope – the rhythms and contrasts of its open steel arches played against the solid masses of its piers and towers, and the character of its robust, neoclassically inspired details, executed in both stone and iron. It is the intent of the present project to restore the critical elements of this architectural envelope. At the same time a second tier of bridge elements, of less historical significance/visual impact than the critical elements, will be rehabilitated with historical sensitivity, and the underlying structural elements will be rehabilitated to safely carry modern loads.

CRITICAL ELEMENTS TO BE RESTORED

The critical elements of the Longfellow Bridge's architectural envelope include:

1. The exteriors of the four main towers on Piers 5 and 6, including their doors, window grilles, and lights; and the sculpted pier ends from which the towers rise;
2. The cast iron pedestrian sidewalk railing, and the associated cast iron fascia that masks the edge of the concrete sidewalk slab, on the 11 main spans of the bridge;
3. The exteriors of the four abutment towers, including their doors, window grilles, and lights; and
4. The (now missing) original street lights.

MassHighway's (MHD) and the Division of Conservation and Recreation's (DCR) goal is to treat each of the above elements in accordance with the *Secretary of the Interior's Standards for Restoration*.

1. The Four Main Towers

Given the extent of the settlement and cracking exhibited by the main towers, taking down and re-erecting the towers is the preferred approach, with the intent that the re-erected towers' exterior appearance will be virtually indistinguishable from how they looked originally. To comply with the *Secretary's Standards for Restoration* the original Neoclassical light sconces of the main towers will be reproduced as exactly as is feasible. The look of those robust, Neoclassical cast bronze fixtures against the towers was a critical component of the Longfellow's architectural character. MHD and DCR propose, as well, a full restoration (or, where necessary, replication) of the original bronze window grilles, sashes, frames, and doors.

2. The Pedestrian Sidewalk Railing / Fascia

MHD and DCR propose a full restoration/replication of the iron railing / fascia in keeping with the *Secretary's Standards for Restoration*.

3. The Four Abutment Towers

In compliance with the *Secretary's Standards for Restoration,* the original Neoclassical doorway lanterns of the abutment towers (which are not identical to the sconces on the main towers) will be reproduced as exactly as is feasible and mounted in their original locations. The new interior steel frame proposed to stabilize each tower will be designed to be virtually invisible from outside.

4. Streetlights/Poles

The original historic streetlights/poles along the sidewalk side of the bridge will be replicated as closely as is feasible and compatible with current lighting requirements. The proposed new roadway lights along the MBTA reservation will be designed to be compatible with the historic features of the bridge.

ELEMENTS TO BE SENSITIVELY REHABILITATED

A second tier of bridge elements, of somewhat less historical significance/visual impact than the critical elements listed above, will be treated in accordance with *The Secretary's Standards for Rehabilitation*. These elements to be sensitively rehabilitated include:

1. The steel arch ribs (particularly the fascia ribs);
2. The most visible elements of the deck structural support system (most particularly, the latticed members supporting the projecting sidewalks; the latticed uprights carried by the fascia ribs on all spans, and the latticed uprights carried on all ribs of Spans 1, 2 and 11);
3. The parapets/railings/barriers/curbs, other than the cast iron pedestrian railings on Spans 1-11;
4. The exterior staircases at the abutment towers;
5. The granite-clad exterior portions of the piers / abutments, other than the sculpted ends of Piers 5 and 6;
6. The granite retaining walls of both approaches; and
7. The steel buckle plate deck systems of Spans 1, 2 and 11.

1. Steel Arch Ribs

Rehabilitation in place will be the standard treatment for the steel arch ribs. The addition of anchor bolts for the main arch rib bearings and the essentially in-kind replacement (except with stronger steel) of the lateral bracing rods between the arch ribs and their connections should be acceptable. Inconspicuous new longitudinal bracing will be added to the three uppermost panels of the interior highway rib lines in order to meet seismic loading requirements.

2. Deck Structural Support System

The deck of Span 1 will have to be widened and tapered to accommodate the unalterable intrusion of the Charles Street T station at the pinch point. The latticed steel fascia stringers and sidewalk brackets on all spans will be replaced in-kind. As both faces of these elements are exposed to public view, riveting will be seriously considered for these, and any other highly visible built-up members, in at least the exterior rib lines. Original latticed posts will be carefully salvaged, rehabilitated, and reset on all fascia arch ribs and on all ribs in Spans 1, 2 and 11 (those spans being the only ones whose undersides are easily visible to the public). Latticed, in-kind replacement posts will be set on all interior ribs in Spans 3-10. All of the later, solid-member diaphragms between the posts will be replaced by new latticed members of similar proportions. The ends of the deck in each span will be supported on new steel frames to be built inside each pier, instead of bearing on the pier's stone walls. The original steel buckle plate deck systems will be restored in Spans 1, 2 and 11 (and only in these spans).

3. Other Parapets, Railings, Barriers, Curbs

The stone parapet walls at the pier lookouts will be rebuilt using steel dowels - this strengthening of the parapet walls will be invisible from the exterior. An at-curb barrier carrying a single open rail is proposed at the sidewalk curb line, and a modern reproduction of the existing three-rail metal barrier is proposed along the MBTA reservation. A source for granite comparable in color and grain to the existing stones for the new sections of parapet facing required on the Boston upstream approach will be sought; a short length of the original granite parapet at the sidewalk pinch point will have to be removed as part of the deck widening.

4. Original Exterior Staircases

The four exterior stairs leading from the abutment towers down to the parkland below will be rehabilitated. Slight modifications will be required at several points.

5. Other Piers/Abutments

A few masonry blocks at the top of each pier will be carefully removed to allow relocation of the utility duct banks. These locations are virtually invisible, and the contractor will be directed to mark and store the removed blocks within the bridge substructure, so that they may be reinserted if the duct bank is ever abandoned. Careful repair and repointing of the open mortar joints of the piers will be completed.

6. Approach Retaining Walls

Relocation of the granite retaining walls of the Boston approach will be done sensitively, and the rebuilt wall will replicate the appearance of the original retaining wall.

7. Steel Buckle Plate Deck Restoration

MassHighway and DCR have committed to undertake the restoration of the historic steel buckle plate deck system in Spans 1, 2, and 11 (those being the only spans whose undersurfaces are readily viewable by the general public). The existing steel buckle plates in these three spans will be retained and sensitively repaired, as necessary. Missing or irretrievably damaged/deteriorated buckle plates in these three spans will be replaced in-kind. The first option for replacement will be by the substitution of intact original buckle plates salvaged from Spans 3-10 during construction. Only if a sufficient number of intact original buckle plates cannot be identified will new steel buckle plates, matching the originals in design, color, texture, and material, be fabricated and installed.

ELEMENTS OF LITTLE / NO HISTORIC VALUE

Changes to the following elements are presumed to be of minimal concern under Section 106:

1. The materials / structure of the actual deck, other than the surviving original steel buckle plates;
2. The support structure (above the arch ribs and the latticed upright posts carried by the ribs) under the MBTA reservation, including at the Charles Street Station;
3. The structure (including Pier 12) of Spans 12 and 13, provided that the appearance of the 1956 iron railing, granite fascia, and the concrete encased steel stringer carrying them, is retained/reproduced;
4. The cantilevered deck added to the upstream face of the Boston approach; and
5. The concrete stairways added to the Cambridge approach.

Longfellow file

MASS HIGHWAY

Mitt Romney
Governor

Kerry Healey
Lt. Governor

John Cogliano
Secretary

Luisa Paiewonsky
Commissioner

EOT
MASSACHUSETTS
EXECUTIVE OFFICE
OF TRANSPORTATION

January 3, 2006

Mr. Stanley Gee
Division Administrator
Federal Highway Administration
55 Broadway – 10th Floor
Cambridge, MA 02142

Attn: John McVann

RE: Boston/Cambridge: Longfellow Bridge (B-16-009/C-02-002)
Bridge Rehabilitation/Restoration Project (#604361)
Preliminary Field Investigation Program
Section 106 Review – No Adverse Effect

Dear Mr. Gee:

The Massachusetts Highway Department (MassHighway), in cooperation with the Massachusetts Department of Conservation and Recreation (DCR) and the Massachusetts Bay Transportation Authority (MBTA), has authorized its design consultants to develop a field investigation program as part of the project planning process for the Longfellow Bridge Rehabilitation/Restoration Project. The intent of this work is to obtain information necessary to perform the preliminary phase of the design for the federally funded rehabilitation/restoration of this contributing element of the National Register-listed Charles River Basin Historic District. The following information is therefore provided in compliance with Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800), as amended.

PROPOSED WORK

The proposed field investigation program will entail six distinct activities, five to be performed immediately, the sixth to be performed under a separate contract in the spring:

1. Perform geotechnical borings – 12 land-based and 5 from the bridge deck
2. Excavate shallow test pits adjacent to Pier 2 and the Cambridge abutment
3. Perform cone penetration tests (CPTs) – 2 land-based and 5 from the bridge deck
4. Drill vertical concrete cores at 2 bridge piers
5. Perform 28 track probe holes through the ballast on the MBTA reservation

6. Drill horizontal concrete and granite cores at 6 bridge piers (by separate contract)

The specific location of each boring/test included above is shown on the attached copy of "Figure 2A – Site Plan."

Task 1 will involve the drilling of 17 boreholes (roughly 5" nominal diameter; all but three into bedrock), the performance of geotechnical tests, and the recovery of samples, at locations adjacent to or beneath the bridge's substructure in order to investigate soil and bedrock conditions under the bridge. Given the hazards and costs of attempting to utilize a barge-based drilling rig during the winter, the 5 borings into the submerged floor of the basin will be performed from the deck of the bridge. This will require the opening of 5 small holes (roughly

4" to 6" diameter) through the bridge deck (see Figure 3) in the northernmost roadway lane. These holes will be immediately repaired upon completion of the testing work.

Task 2 will involve the mechanical excavation of two shallow test pits – one adjacent to the southerly face of the Cambridge abutment and the other adjacent to the southerly nose of Pier 2 – to allow a subsurface examination of the bridge substructure. Each test pit will measure approximately 10 feet long by 5 feet wide and will be at least 4 feet, but no more than 8 feet, deep. When the examination has been completed the test pits will be backfilled with existing spoil materials, compacted to the original in-place density, and the surface of the test pit areas will be reinstated to the conditions existing prior to the performance of the work.

Task 3 will involve the driving of a cone penetrometer sensor (the standard cone measures 1.41" in diameter) in 7 test holes – 2 on the banks of the river, 5 from the deck of the bridge – to investigate the stratigraphy and characteristics of the soil layers under the bridge. As with Task 1, this will require the opening of 5 small holes (roughly 4" to 6" in diameter) through the bridge deck, which will be immediately repaired upon completion of the testing work.

Task 4 will involve the drilling and recovery of core samples from two pairs of bore holes (four holes, total), drilled with 2" or 3" nominal core bits, drilled vertically into the concrete pier stems of Piers 9 and 10, to an estimated depth of 15-20 feet.

Task 5 will involve the excavation of six test pits, plus the insertion of a steel rod probe at 22 additional locations, in the ballast under the MBTA tracks within the central reservation on the bridge. This work will be done to determine the depth of the existing ballast and the elevation of the upper surface of the concrete deck under the MBTA tracks.

Task 6 (to be performed under separate contract in the spring of 2006) will involve the drilling of 6 horizontal bore holes, of 4" nominal diameter through the granite facing and into the concrete pier stems of Piers 3, 4, 5, 6, 7 and 8 – one hole in each pier. These horizontal cores will each be located in an inconspicuous area under the projecting coping/skewback stones for the arch bearings and just above the water line, in the middle third of each pier's long face (see attached detail sheets). Each core will be drilled through the granite block and a minimum of 8" into the concrete behind it, to allow an evaluation of conditions at the stone/concrete interface. For each core a minimum 8" solid, intact length (a granite "plug") from the outer granite surface part of each core sample will be broken off and retained. After the cores have been removed from the holes, and the rest of each core hole filled, each granite "plug" will be reset into its core hole so that, to the greatest practical extent, the surface of the plugged hole will match the original undisturbed granite surface.

HISTORIC RESOURCES

The Longfellow Bridge is a powerful expression of metropolitan Boston's civic pride in the opening years of the twentieth century – the City Beautiful era. The bridge's significance resides primarily in its iconic overall character – the rhythms and contrasts of its steel arches and granite-clad towers; its setting within the whole Charles River Basin; and its historic use as a multi-modal transportation facility. The most significant individual elements are those neoclassically inspired architectural details – the towers and their appurtenances, the iron railings and fascias, in particular – that give the bridge its distinctive visual character.

The Charles River Basin Historic District is the keystone element in the Boston metropolitan park system, the first such system brought into being in the United States. Historically a tidal estuary flanked by malodorous mud flats, the lower reaches of the Charles were transformed into a park-lined basin after construction of the Charles River dam in 1910. Although its parklands, pathways, and roadways have evolved considerably over the years, the Charles River Basin remains a critical element in the metropolitan Boston park system.

IMPACTS

Tasks 1, 2 and 3 will impact land areas on both banks of the river and submerged areas in the basin adjacent to or below the bridge. The project's archaeological consultant, the Public Archaeological Laboratory (PAL), in their draft technical report presenting the results of their archaeological assessment of the project area (a copy of the final report will be forwarded to each Section 106 consulting party upon completion), have concluded that:

"Given the original shoreline locations well inland of both the Cambridge and Boston sides of the modern Longfellow Bridge approaches, the river channel dredging, and the severity of twentieth-century reconfigurations of the bridge approaches/highway/rapid transit infrastructure, it is not expected that any significant archaeological resources are present anywhere within at least a 500 ft radius of the Longfellow Bridge substructure. **No archaeological investigations are recommended for the Longfellow Bridge Rehabilitation and Restoration Project.**"

The PAL report further concludes: "Archaeological monitoring of the proposed geotechnical test pit program would also not be expected to identify any intact land surfaces or significant archaeological resources."

No existing park structures and no existing park plantings (other than grass) on either bank of the river will be impacted by any of the proposed Tasks.

The impacts of Tasks 1 and 3 on the bridge deck will be confined to the excavation, drilling, and patching of 10 small (4" to 6" diameter) holes through the deck in the northerly travel lane. Some of these holes are expected to be placed in areas where the original concrete/steel buckle plate deck structure has already been replaced; all of the holes are in areas where the existing deck is expected to be replaced as part of the overall bridge rehabilitation/restoration project. The steel buckle plate/concrete floor system has been described by PAL in their draft identification and assessment of the historic elements of the bridge (after consultation with Eric DeLony, former Chief of the Historic American Engineering Record) as "a prosaic and economic engineering solution for decking wide and long-span bridges," commonly used in American bridges through the late nineteenth century. "It's incorporation in the Longfellow Bridge was a late use of a then-common engineering practice for bridge decks."

The impacts of Task 4 will be confined to small sections of the concrete piers stems hidden within the interior of Piers 9 and 10, in areas not visible to the public.

The impacts of Task 5 will be confined to the ballast and the (normally buried) upper surface of the concrete deck under the MBTA tracks. These impacts will be minor, virtually invisible, and upon parts of the bridge of little significance.

The impacts of Task 6 will be limited to 6 small boreholes located in inconspicuous areas just above the waterline and under the projecting coping course of 6 piers, each borehole will be carefully plugged by the granite core removed from that hole at the completion of testing.

EFFECTS

It is MassHighway's opinion that the work proposed under the Preliminary Field Investigation Program will have **no adverse effect** on those characteristics of the Longfellow Bridge or of the Charles River Basin Historic District as a whole, that have qualified those properties for listing in the National Register of Historic Places.

If the Federal Highway Administration concurs with MassHighway's recommended **No Adverse Effect** finding for the Preliminary Field Investigation Program for the Longfellow Bridge Rehabilitation/Restoration Project, please forward the enclosed copy of this letter and the full set of original supporting materials to the Massachusetts Deputy State Historic Preservation Officer for her review and concurrence.

Please forward, as well, the enclosed full copies of this package to the three other Section 106 consulting parties for this project: the Massachusetts Department of Conservation and Recreation; the Boston Landmarks Commission; and the Cambridge Historical Commission (address list attached).

If you should have any questions, please feel free to contact me at 617.973.7492.

Sincerely,

Stephen J. Roper

Stephen J. Roper
Structural Historian

SJR/do

Atts: "Figure 2A – Site Plan"
"Figure 3 – Bridge Deck Detail"
Pier core details (Task 6) – 4 sheets
Consulting Parties Address List

Encs: packages to be forwarded to:
MA SHPO
DCR
BLC
CHC

xc: J. Blundo, Chief, w/o atts.
M. O'Dowd, Project Management, w/ atts.

U.S. Department
of Transportation
**Federal Highway
Administration**

**Massachusetts Division
55 Broadway, 10th Floor
Cambridge, MA 02142**

January 24, 2006

In Reply Refer To:
HDA-MA

Ms. Brona Simon
Deputy State Historic Preservation Officer
Massachusetts Historic Commission
220 Morrissey Boulevard
Boston, MA 02116

***Subject:** **Boston/Cambridge: Longfellow Bridge (B-16-009/C-02-002)
Bridge Rehabilitation and Restoration Project (#604361)
Preliminary Field Investigation Program
Section 106 Coordination – No Adverse Effect***

Dear Ms. Simon:

Attached is documentation supporting the Massachusetts Highway Department's finding of *No Adverse Effect* for the above referenced project. The Federal Highway Administration agrees with this finding and, in compliance with Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800), we seek your input.

Do not hesitate to contact us, should you have any questions/comments.

Sincerely yours,

Stanley Gee
Division Administrator

Alexander Almeida

By: Alexander Almeida
Assistant Division Administrator

Enclosure

cc: Mr. John Blundo, Chief Engineer, MHD/ Room 3510
Mr. Gregory Prendergast, Deputy Chief Engineer, MHD/ Room 4260

The Commonwealth of Massachusetts
William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

February 24, 2006

Stanley Gee
Division Administrator
Federal Highway Administration
55 Broadway, 10^{th} Floor
Cambridge, MA 02142

RE: Longfellow Bridge (B-16-009/C-02-002), Cambridge, MA
Bridge Rehabilitation and Restoration Project – Preliminary Field Investigation Program
MHD# 604361, MHC# RC.3027

Dear Mr. Gee:

Thank you for providing the Massachusetts Historical Commission with an opportunity to comment on the proposed rehabilitation of the Longfellow Bridge (MHC# CAM.912). As you know, the bridge is listed in the National Register of Historic Places as a contributing element of the Charles River Basin Historic District.

The proposed preliminary field investigation program involves six distinct activities: (1) Perform geotechnical borings, 12 land-based and 5 from the bridge deck, (2) Excavate shallow test pits adjacent to Pier 2 and the Cambridge abutment, (3) Perform cone penetration tests, 2 land-based and 5 from the bridge deck, (4) Drill vertical concrete cores at 2 bridge piers, (5) Perform 28 track probe holes through the ballast on the MBTA reservation and (6) Drill horizontal concrete and granite cores at 6 bridge piers.

After a review of the project information submitted, and a copy of the Cambridge Historical Commission's comments (copy enclosed), the MHC has the following concerns.

1. MHD proposes that its contractors will core the granite sheathing to assess the condition of the concrete piers and then seal the holes using the extracted cores. No detail is provided about how this will be accomplished to minimize the visual intrusion and, more importantly, permanently seal the holes against water intrusion that could damage the piers in the future.
2. MHD proposes to core the piers in the first course at what we assume is the mean high water line. Not only does the level of the basin vary, depending on rainfall and the availability of the pumps at the new dam, but drilling at this level will expose the cores to the normal action of waves and ice. MHC suggests that the bores be placed higher on the piers.

The MHC looks forward to receiving and reviewing MHD's response to these concerns.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800) and Massachusetts General Laws, Chapter 9, Sections 26-27C (950 CMR 71). If you have any questions, please feel free to contact Walter Maros or Ann Lattinville at this office.

Sincerely,

Brona Simon

Brona Simon
Deputy State Historic Preservation Officer
Acting Executive Director
Massachusetts Historical Commission

enclosure

xc: John Blundo, MHD
Steve Roper, MHD
Charles Sullivan, CHC
Ellen Lipsey, BLC

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.sec.state.ma.us/mhc

MASS HIGHWAY

Mitt Romney
Governor

Kerry Healey
Lt. Governor

John Cogliano
Secretary

Luisa Paiewonsky
Commissioner

EOT
MASSACHUSETTS
EXECUTIVE OFFICE
OF TRANSPORTATION

March 9, 2006

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MAR 10 2006
MASS. HIST. COMM

Ⓡ 3027

Ms. Brona Simon
Deputy State Historic Preservation Officer
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, MA 02125

RE: Boston/Cambridge: Longfellow Bridge (B-16-009/C-02-002)
Bridge Rehabilitation/Restoration Project (#604361) (MHC# RC.3027)
Preliminary Field Investigations -- Section 106 Review

Dear Ms. Simon:

The Massachusetts Highway Department (MassHighway) on behalf of the Federal Highway Administration (FHWA), would like to offer the following responses to the comments initially raised by the Cambridge Historical Commission and incorporated into your letter to FHWA dated February 24, 2006, regarding the Section 106 review for this phase of the Longfellow Bridge Rehabilitation/Restoration Project.

Comment 1 – sealing the core holes.

Copies of the specification for **Removing Core Samples from the Exterior of Selected Longfellow Bridge Piers** were faxed to your office and to the Cambridge Historical Commission on January 26, 2006; an additional hard copy of the specification is attached. Please note the third page of the specification, where "Repair of core holes" details the procedures to be followed to ensure that each hole is properly sealed and that each plugged hole matches the original undisturbed granite surface to the greatest practical extent.

The careful use of a modern, high-quality epoxy-based mortar to seal each reused granite plug should ensure the water-tightness of each plugged borehole. The careful adherence of the contractor to the specifications (monitored by the Resident Engineer) should ensure that the plugged and sealed holes will be as close to invisible as is feasible.

Comment 2 – locations of the cores.

The pier cores are proposed to be taken in the only course of masonry that is both above the normal high water line and below the course of (much larger and structurally more important) skewback/coping blocks that support the steel arch ribs (see attached sketches). As the point of this particular field investigation is to determine whether the interior concrete backing of the piers may have been degraded by water penetration over time, it is actually critical that these cores be taken at or near the water line.

In response to these concerns, as initially voiced by the Cambridge Historical Commission, MassHighway and its consultants have considered whether there might be other means of obtaining the required information. Unfortunately, no feasible alternatives to the proposed boring plan have been identified.

MassHighway, on behalf of the FHWA, requests that your office review the attached materials at your earliest convenience, and solicits your concurrence with our recommended finding under Section 106 that the Preliminary Field Investigation Program (as described in this and in FHWA's January 24, 2006, submittal to your office) will have No Adverse Effect on those characteristics of the Longfellow Bridge, or of the Charles River Basin Historic District as a whole, that have qualified those properties for listing in the National Register of Historic Places.

If you have any questions, please feel free to contact me at 617.973.7492.

Sincerely,

Stephen J. Roper

Stephen J. Roper
Structural Historian
Environmental

Atts: Core sample specification
Core hole repair detail sketch
Core location sketches (2)

[illegible]: Brona Simon
4/10/06
BRONA SIMON
DEPUTY STATE HISTORIC
PRESERVATION OFFICER
MASSACHUSETTS
HISTORICAL COMMISSION

xc: ✓ T. Janikula, FHWA, w/ atts.
✓ E. Lipsey, BLC, w/ atts.
✓ C. Sullivan, CHC, w/ atts.
N. Baratta, DCR, w/ atts.
J. Blundo, Chief, w/o atts.
M. O'Dowd, PM, w/ atts.

MASS HIGHWAY

Mitt Romney
Governor

Kerry Healey
Lt. Governor

John Cogliano
Secretary

Luisa Paiewonsky
Commissioner

EOT
MASSACHUSETTS
EXECUTIVE OFFICE
OF TRANSPORTATION

January 6, 2006

RE: Boston/Cambridge: Longfellow Bridge (B-16-009/C-02-002)
Bridge Rehabilitation/Restoration Project (604361)
Archaeological Assessment Report

Ms. Brona Simon
MA State Archaeologist
Deputy State Historic Preservation Officer
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, MA 02125

Dear Ms. Simon:

In support of our January 3, 2006 Section 106 documentation submitted to your office through the Federal Highway Administration (FHWA) for the above-referenced project, we have enclosed an archaeological assessment report prepared by The Public Archaeology Laboratory, Inc. (PAL). At the request of MassHighway, PAL conducted documentary research and consulted appropriate agencies and individuals to develop a historic overview and land use history of the project area, including a detailed reconstruction of the Cambridge and Boston shorelines adjacent to the bridge abutments and approaches. The report describes the results of this research and provides recommendations regarding archaeological sensitivity and any further study that might be needed within the project area.

The PAL report ascribes little or no archaeological sensitivity to the project area based on the original shoreline locations well inland of the Cambridge and Boston sides of the modern Longfellow Bridge approaches, and the effects of river channel dredging and twentieth century reconfigurations of the bridge approaches, highway and rapid transit infrastructure. PAL further concludes that monitoring of the proposed geotechnical boring program would not be expected to identify any intact archaeological resources, and recommends that no further archaeological investigation be conducted within the project area.

MassHighway's Cultural Resources Unit (CRU) staff has reviewed the report and agrees with its conclusions and recommendations. If you should have any questions, please feel free to call me at 617-973-7493, or Stephen J. Roper at 617-973-7492.

Sincerely,

John E. Rempelakis

John E. Rempelakis
Department Archaeologist
Environmental Section

JER/jr
atts:
PAL Archaeological Assessment Report (2 copies)
CD w/ abstract and bibliographic entry

xcs:
M. O'Dowd, MassHighway, w/out atts.
J. McVann, FHWA, w/ report (1)
N. Baratta, DCR, w/ report (1)
E. Lipsey, BLC, w/ report (1)
C. Sullivan, CHC, w/ report (1)

MASS HIGHWAY

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Kerry Healey
Lt. Governor

John Cogliano
Secretary

Luisa Paiewonsky
Commissioner

EOT
MASSACHUSETTS
EXECUTIVE OFFICE
OF TRANSPORTATION

May 17, 2006

RE: BOSTON-CAMBRIDGE—Rehabilitation of the Longfellow Bridge
(MHD Project #604361)
Section 106 Review

Ms. Brona Simon
Deputy State Historic Preservation Officer
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, MA 02116

Dear Ms. Simon:

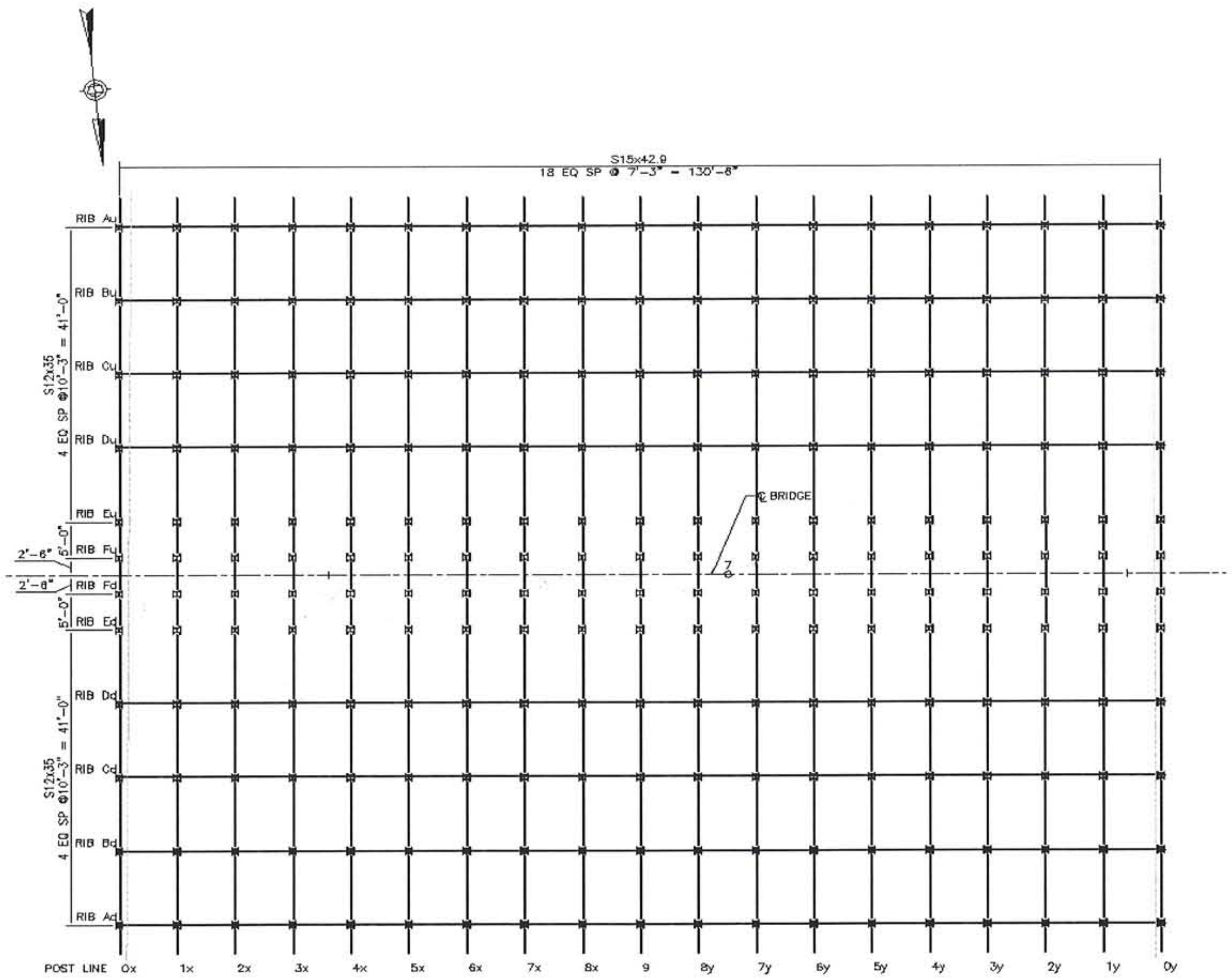
Please find enclosed for your information and use one copy of the *Historical Identification and Assessment Report* for the Longfellow Bridge Rehabilitation and Restoration Project. PAL, Inc., has prepared this report for the project design team. This report contains a history of the bridge and an analysis of the changes that have been made to the character-defining features of the bridge over time. It also identifies other known historic resources in the project area and in the broader area of potential effect. If you have any questions about this report please feel free to call me at (617) 973-7492.

Sincerely,

Stephen J Roper

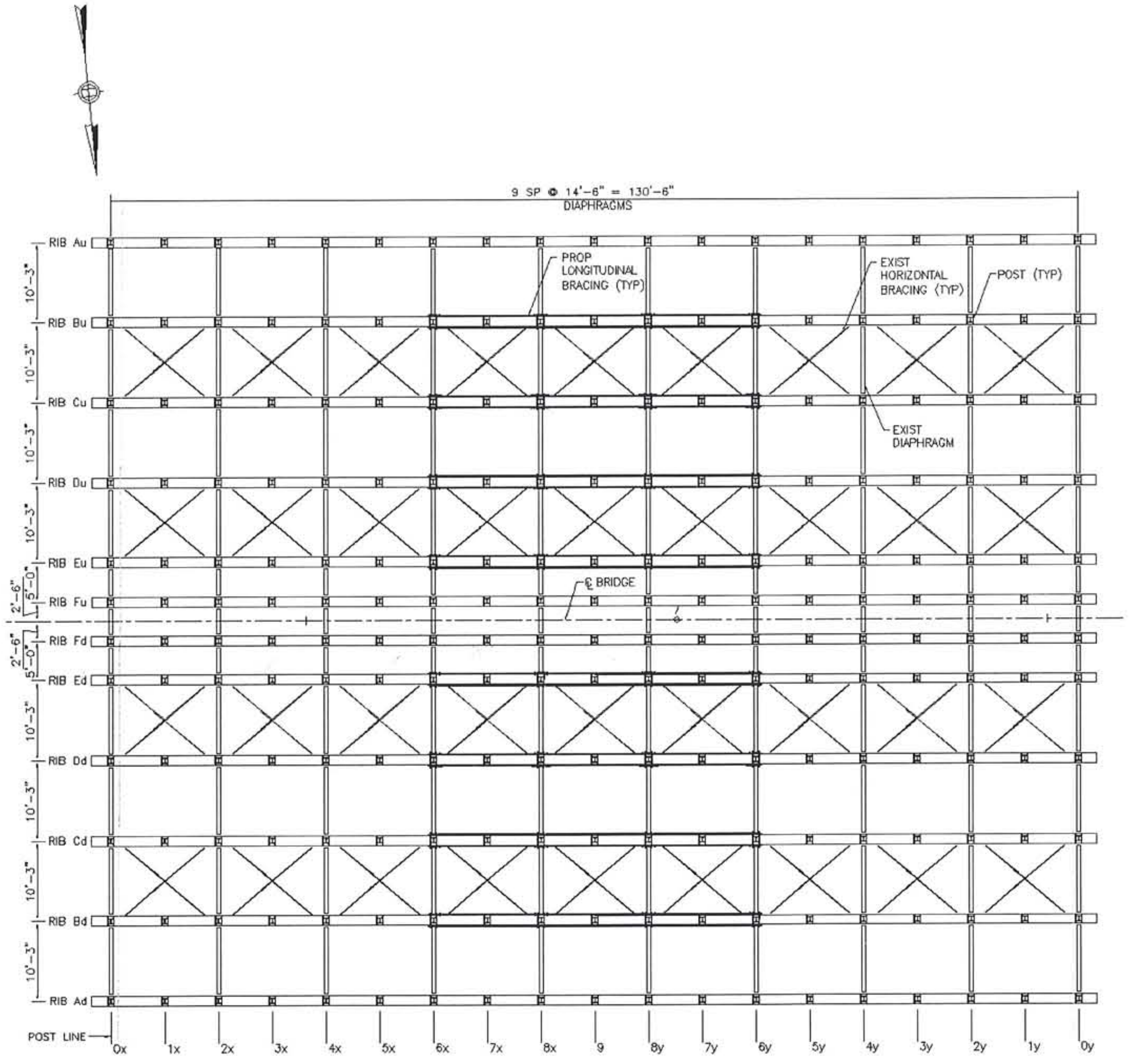
Stephen J. Roper
Structural Historian
Environmental Services

Enclosure



FLOOR FRAMING PLAN SPAN 3

MASSHIGHWAY	JACOBS	Rehabilitation and Restoration of the Longfellow Bridge Preliminary Structure Report	Floor Framing Plan Span 3	September 2006 Fig. 4.2-4



RIB FRAMING PLAN SPAN 3

MASS HIGHWAY

JE JACOBS

Rehabilitation and Restoration of the Longfellow Bridge

Preliminary Structure Report

Rib Framing Plan Span 3

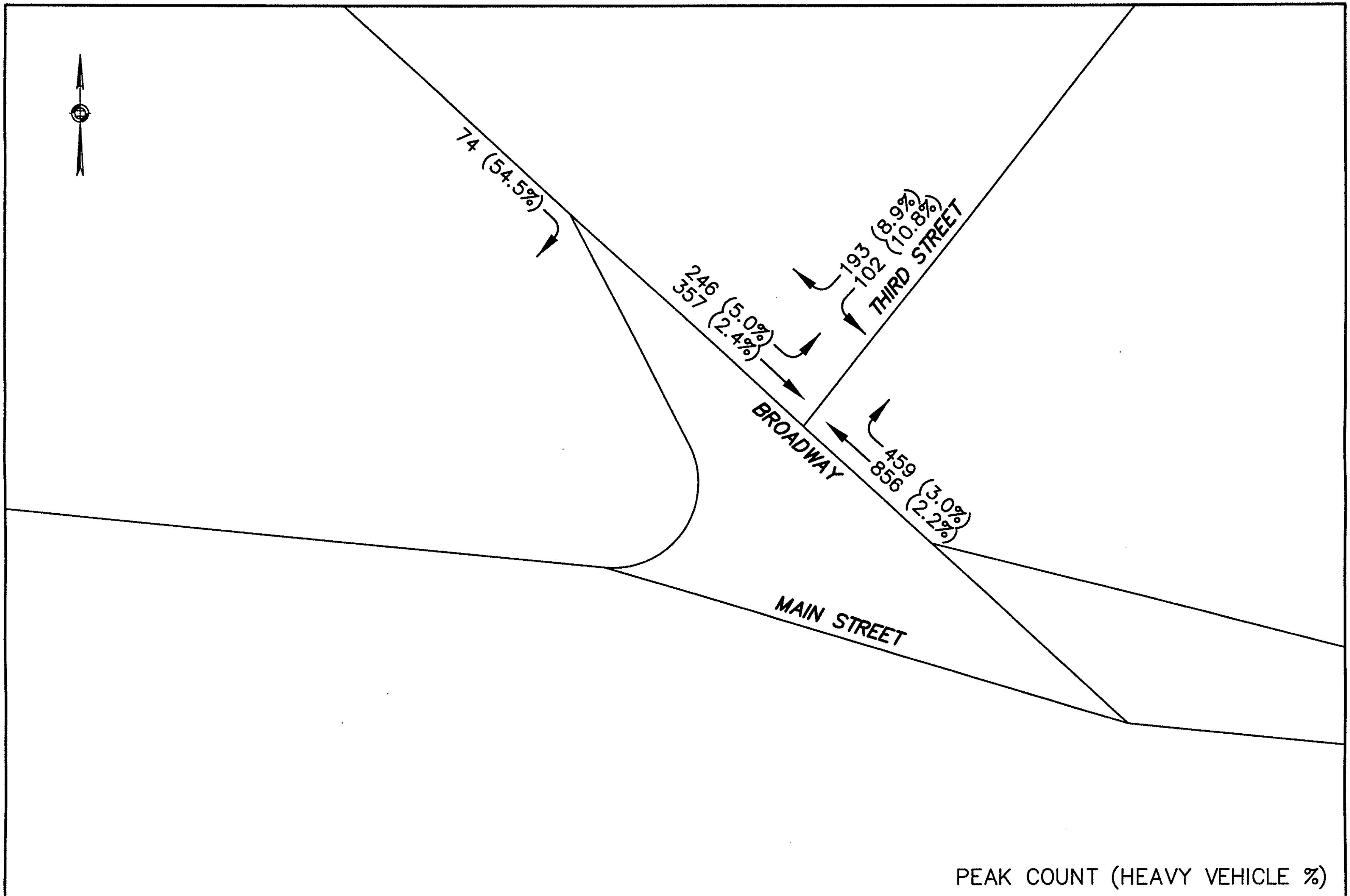
September 2006

Fig. 4.2-5

Attachment 7

Traffic Analysis

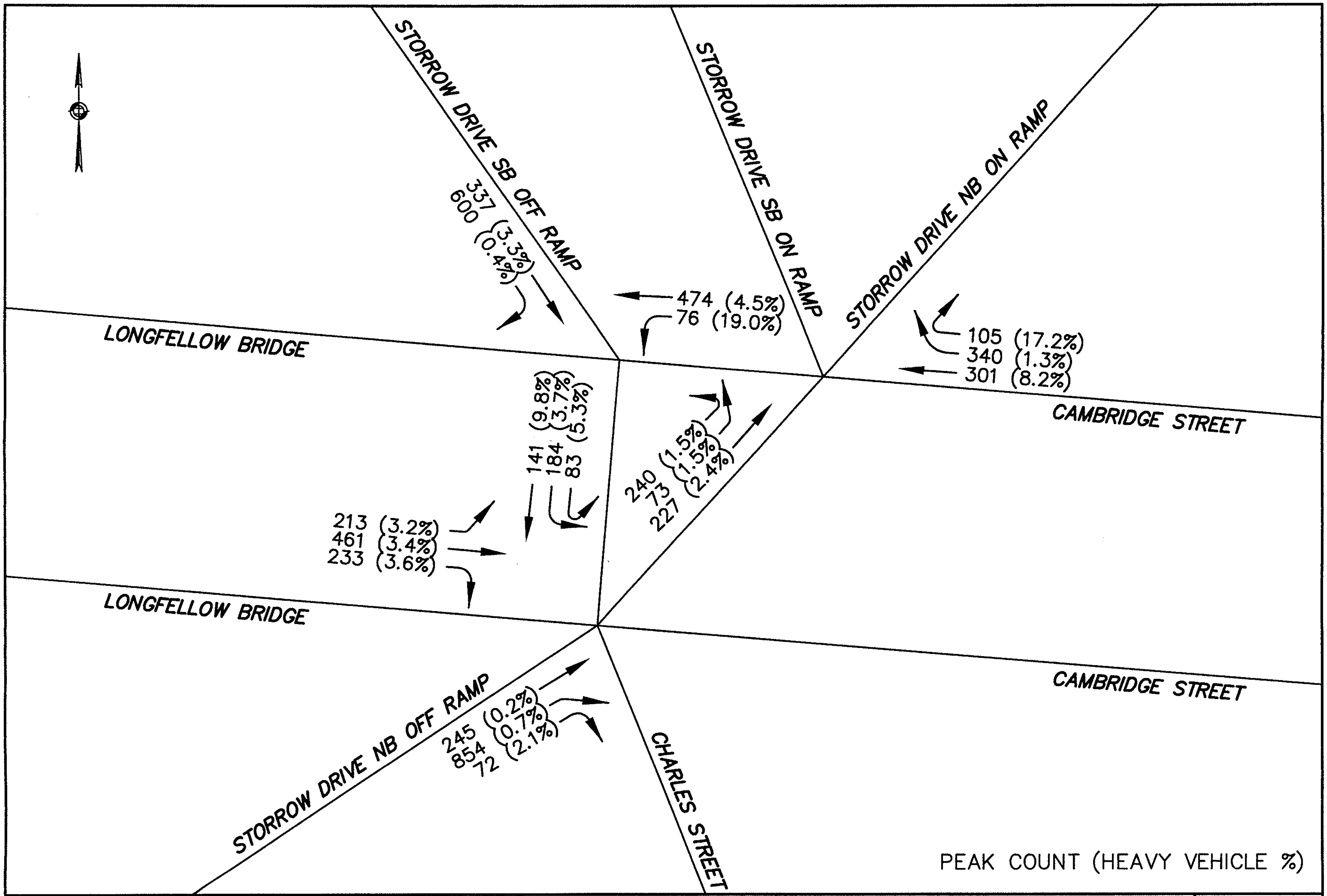
- Counts of Vehicle, Bicycle, and Pedestrian Traffic in the Bridge Area
- Technical Memorandum Comparing Two Lane and Three Lane Approaches to Charles Circle at the Boston Side of the Bridge



C&C CONSULTING ENGINEERS, LLC
214 LINCOLN STREET
BOSTON, MA 02134

2006 AM PEAK HOUR
TURNING MOVEMENT COUNTS (TMC)
AND HEAVY VEHICLE FACTORS

FIGURE
6A



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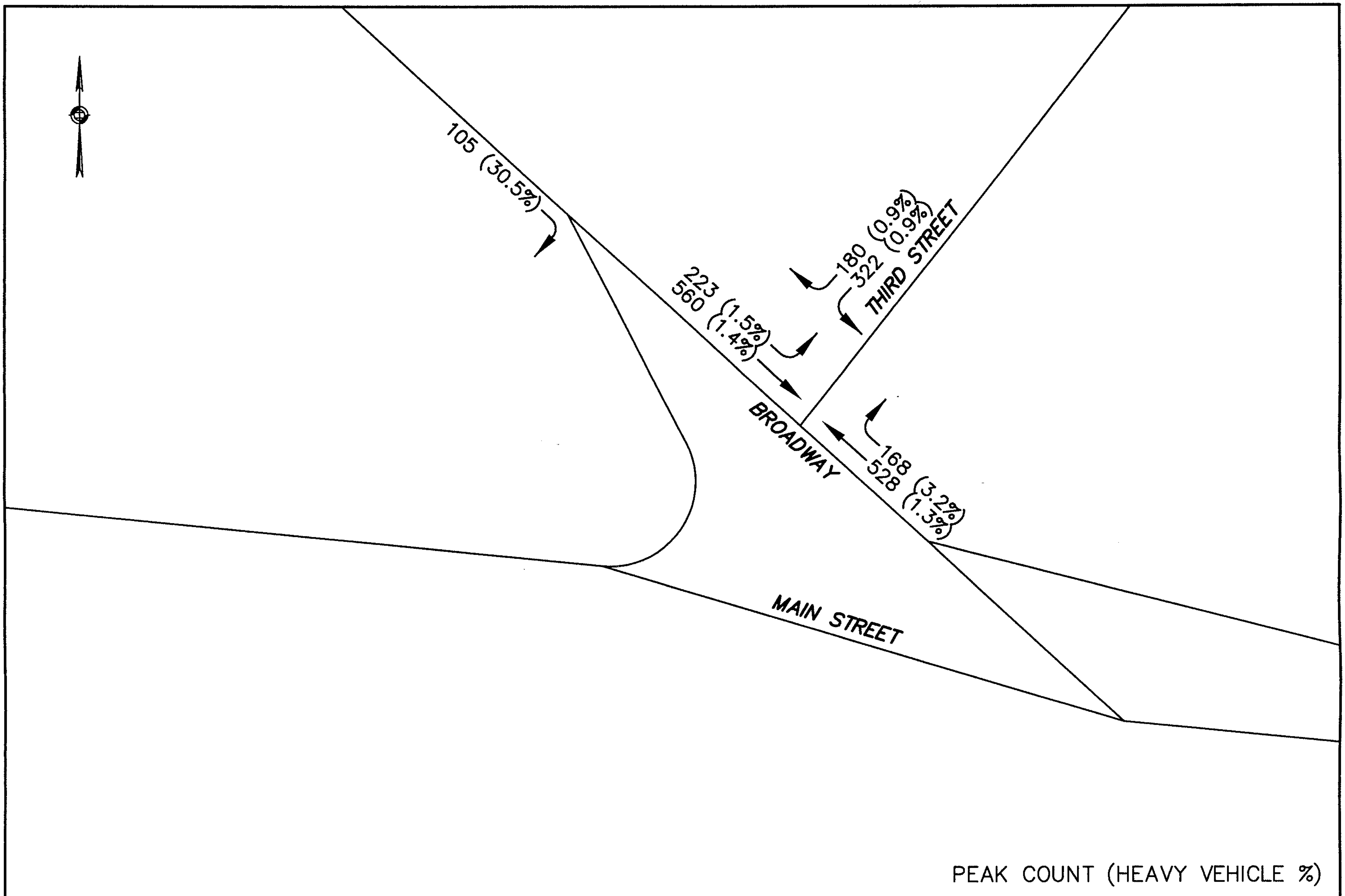
BOSTON, MA 02134

2006 AM PEAK HOUR TURNING MOVEMENT COUNTS (TMC) AND HEAVY VEHICLE FACTORS

FIGURE
6B



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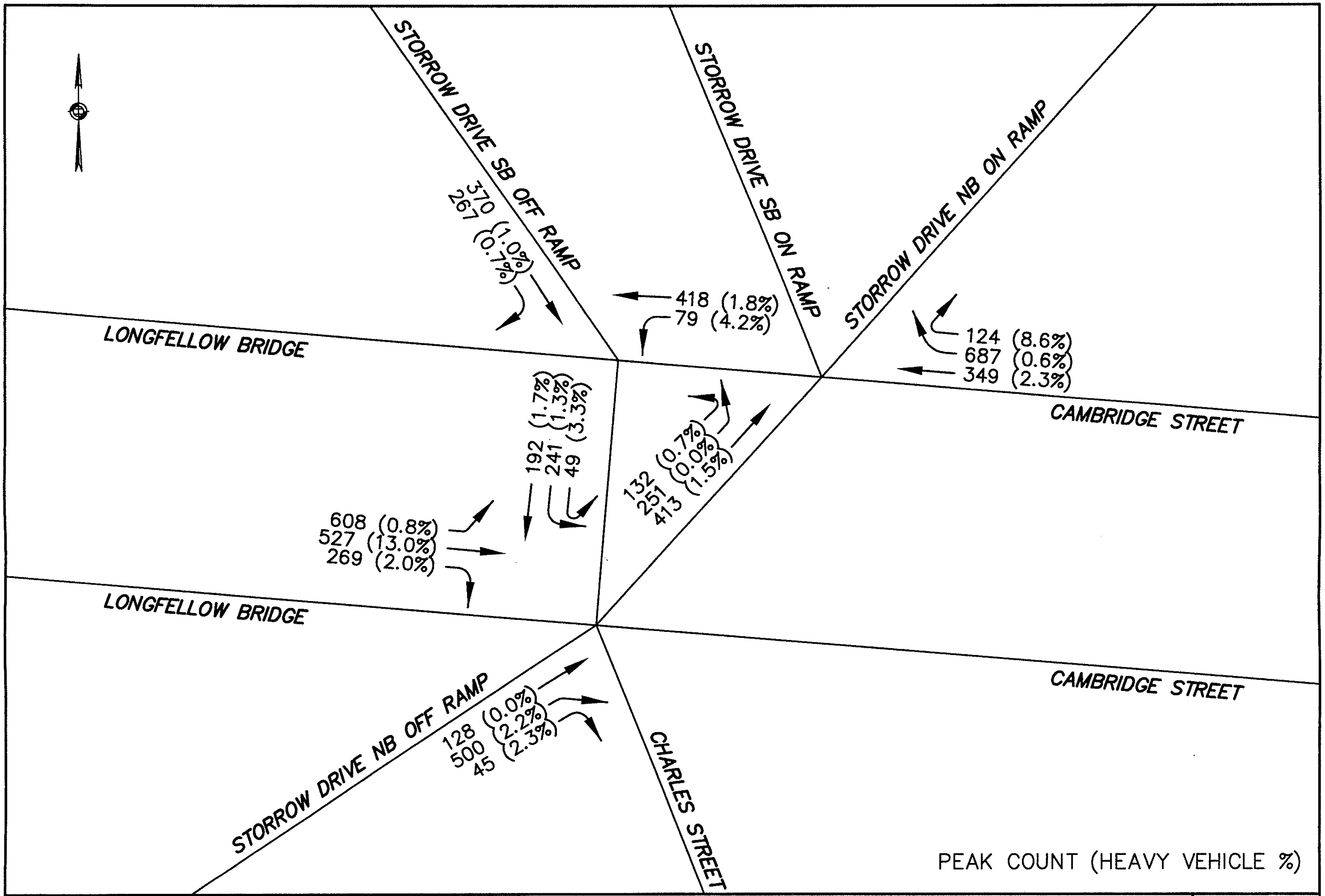
214 LINCOLN STREET
BOSTON, MA 02134

2006 PM PEAK HOUR TURNING MOVEMENT COUNTS (TMC) AND HEAVY VEHICLE FACTORS

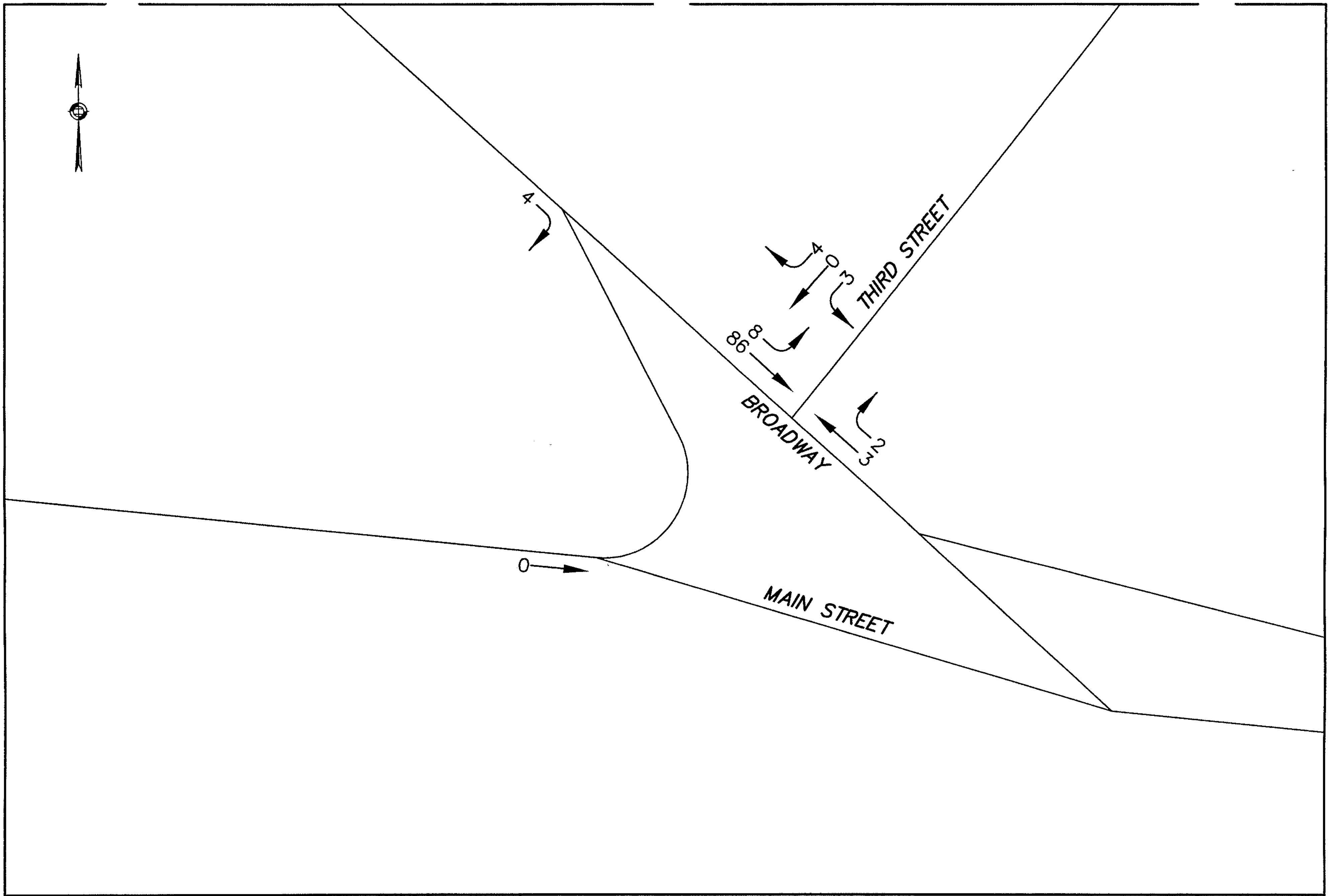
FIGURE
7A



C&C CONSULTING ENGINEERS, LLC
214 LINCOLN STREET
BOSTON, MA 02134

2006 PM PEAK HOUR TURNING MOVEMENT COUNTS (TMC) AND HEAVY VEHICLE FACTORS

FIGURE 7B



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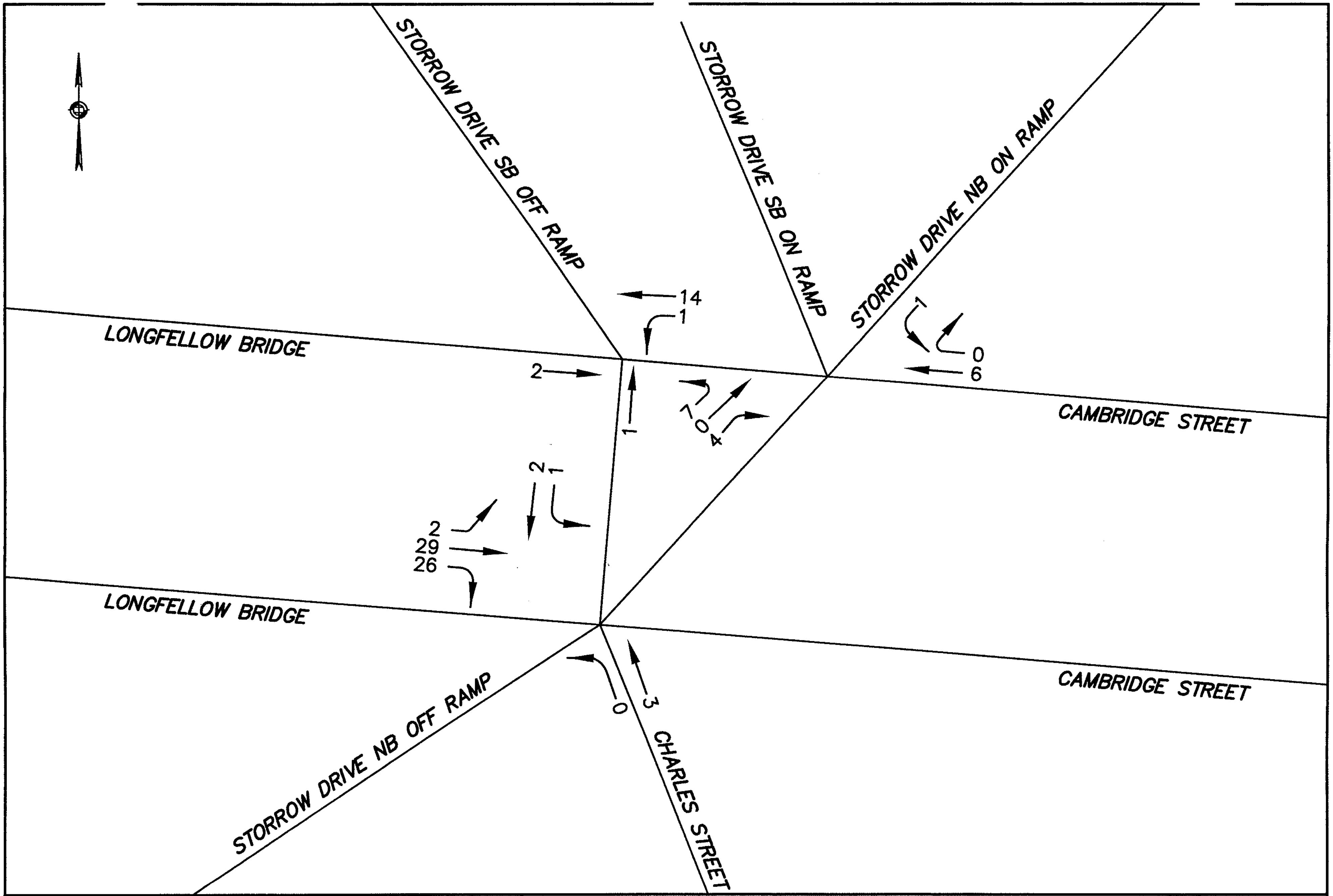
214 LINCOLN STREET
BOSTON, MA 02134

2006 AM PEAK HOUR
BICYCLE COUNTS

FIGURE
B1A



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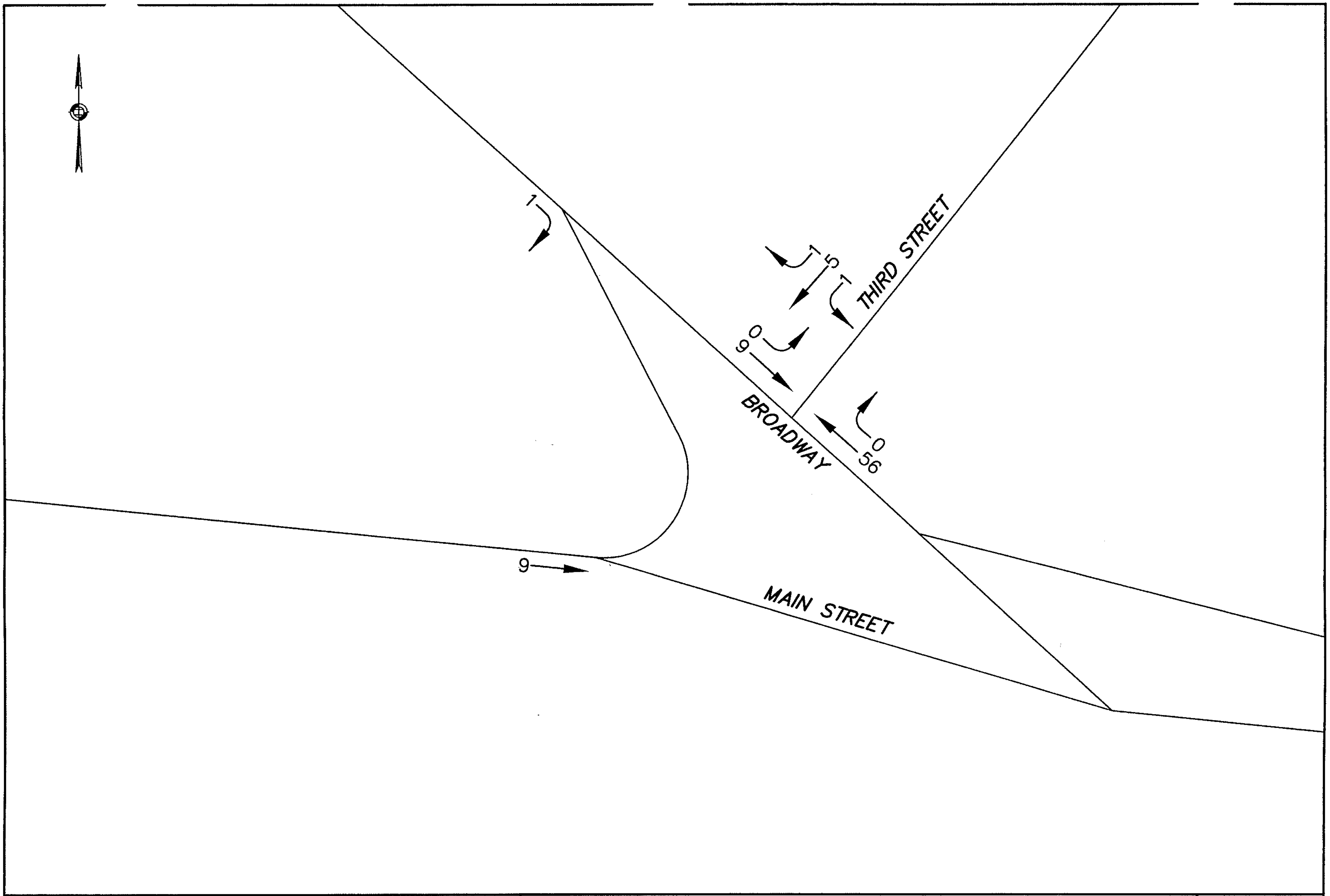
214 LINCOLN STREET
BOSTON, MA 02134

2006 AM PEAK HOUR
BICYCLE COUNTS

FIGURE
B1B



C&C CONSULTING ENGINEERS, LLC
214 LINCOLN STREET
BOSTON, MA 02134

2006 PM PEAK HOUR
BICYCLE COUNTS

FIGURE
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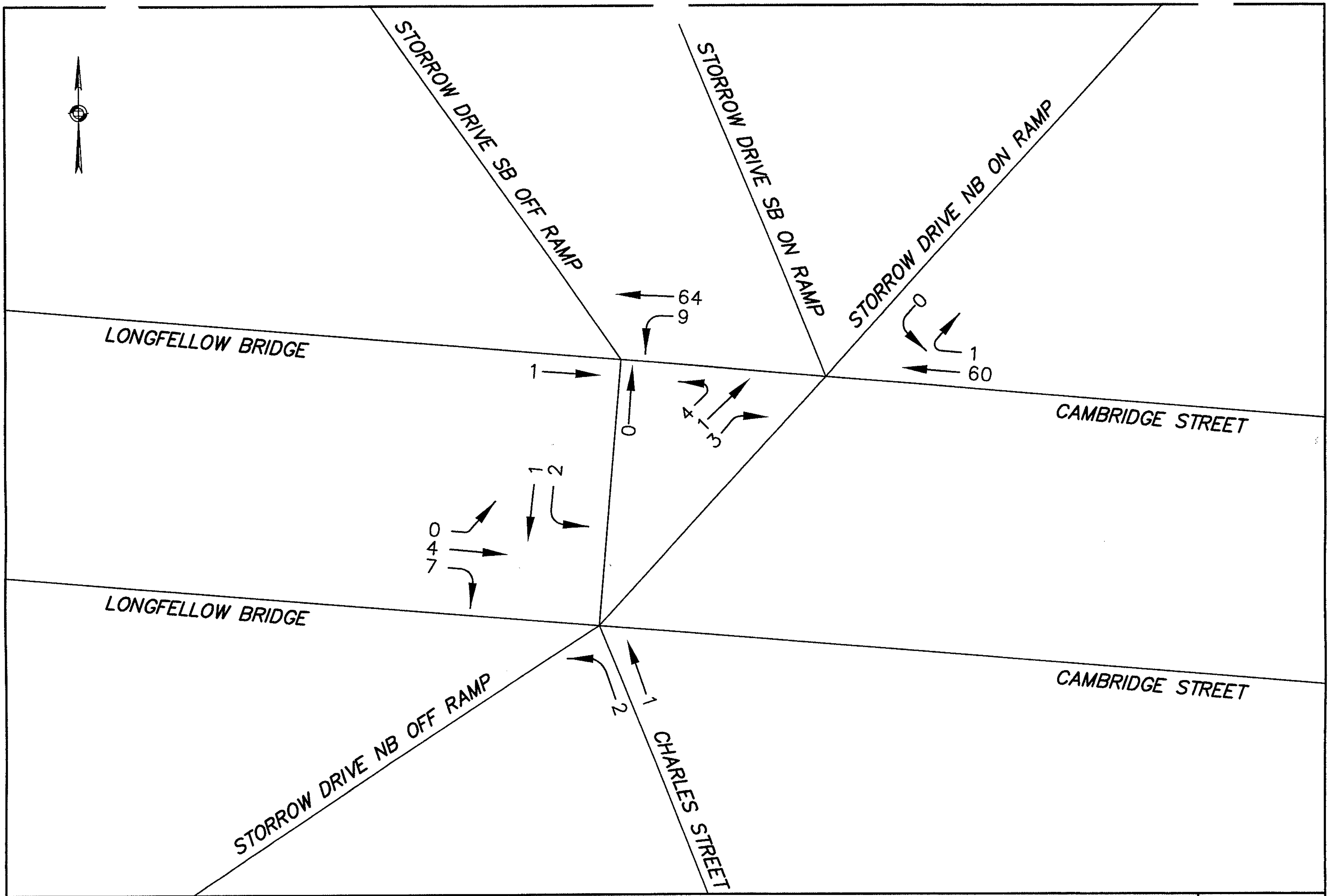
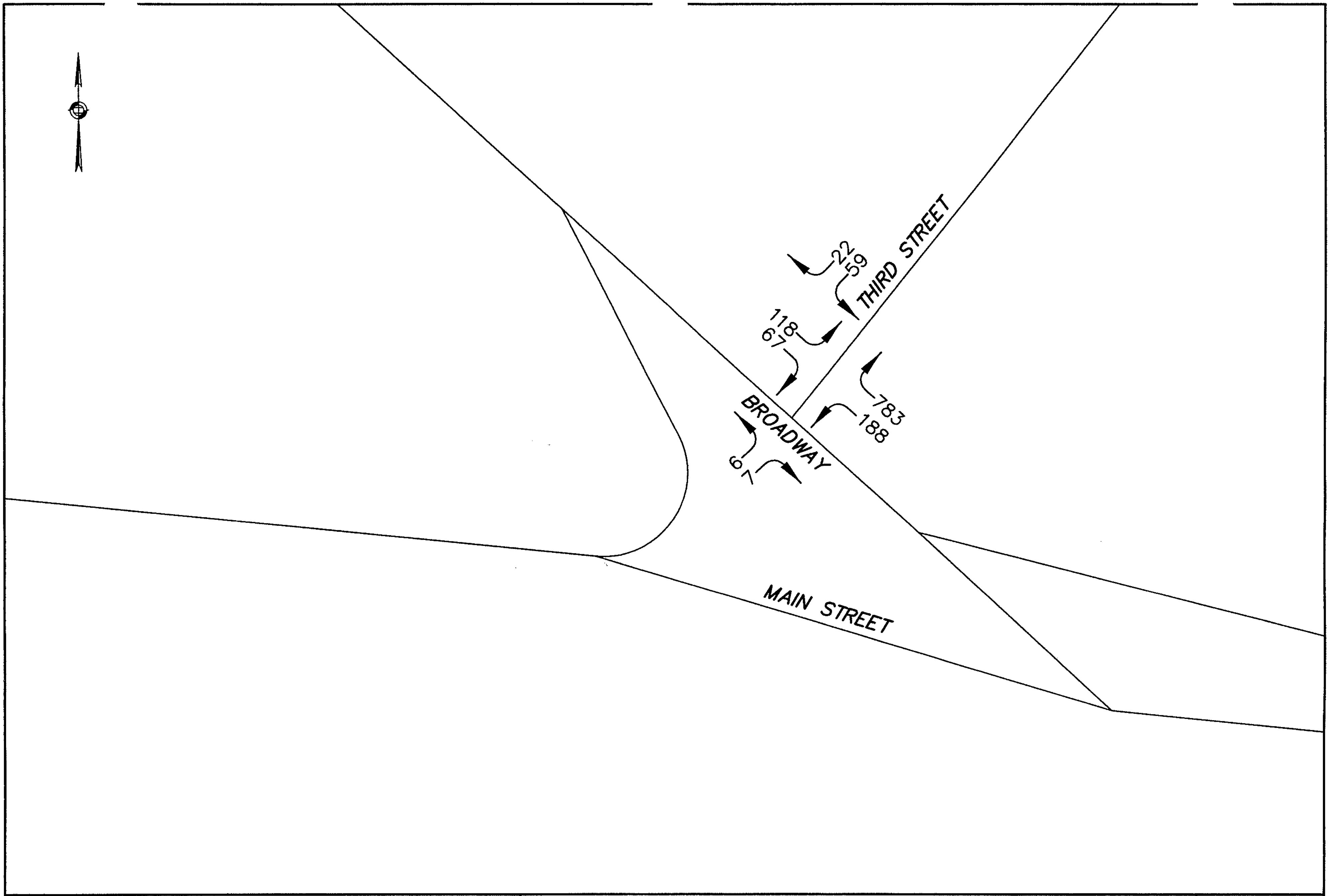


C&C CONSULTING ENGINEERS, LLC
214 LINCOLN STREET
BOSTON, MA 02134

2006 PM PEAK HOUR
BICYCLE COUNTS

FIGURE
B2B



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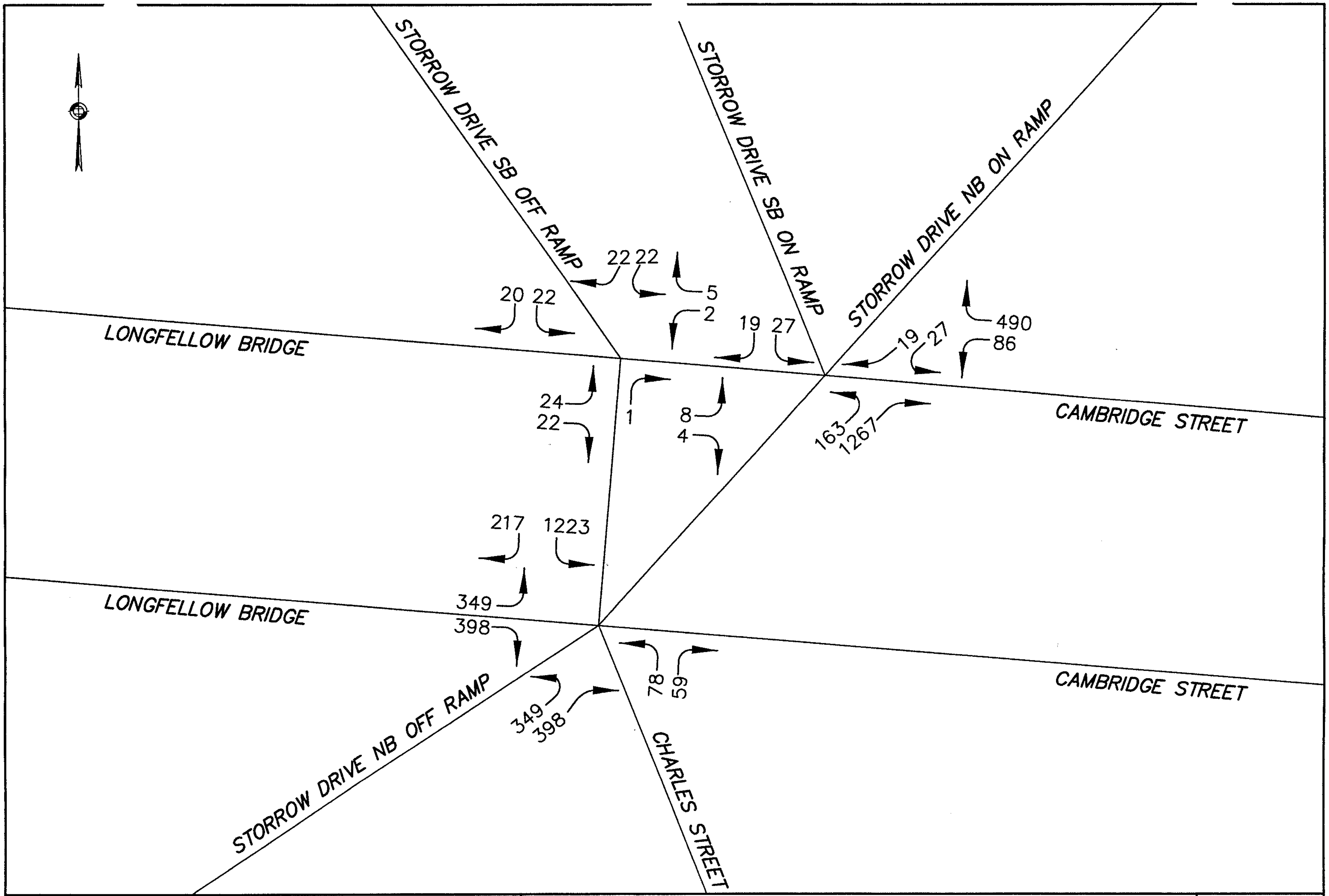
BOSTON, MA 02134

2006 AM PEAK HOUR PEDESTRIAN COUNTS

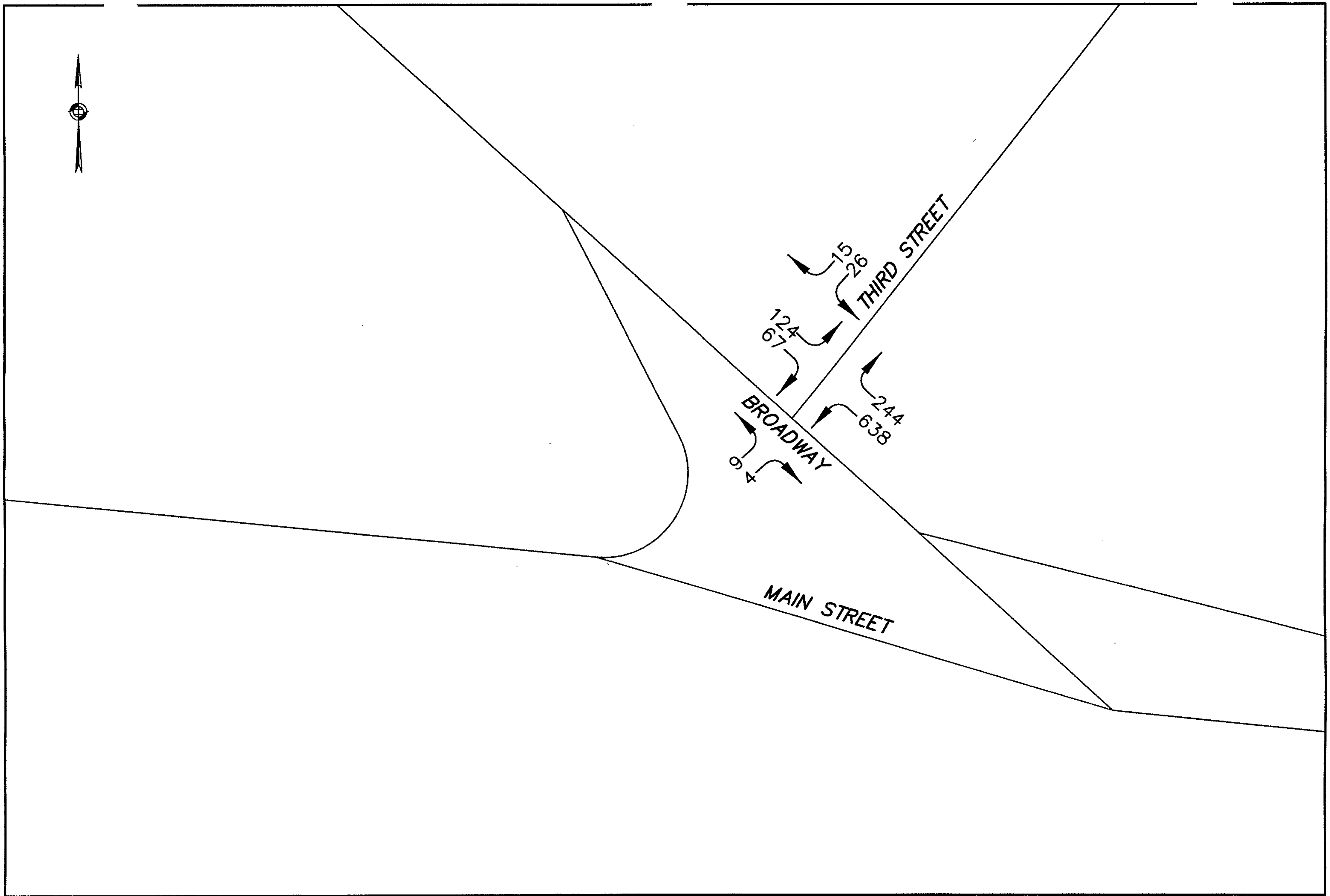
FIGURE
B3A



C&C CONSULTING ENGINEERS, LLC
214 LINCOLN STREET
BOSTON, MA 02134

2006 AM PEAK HOUR
PEDESTRIAN COUNTS

FIGURE
B3B



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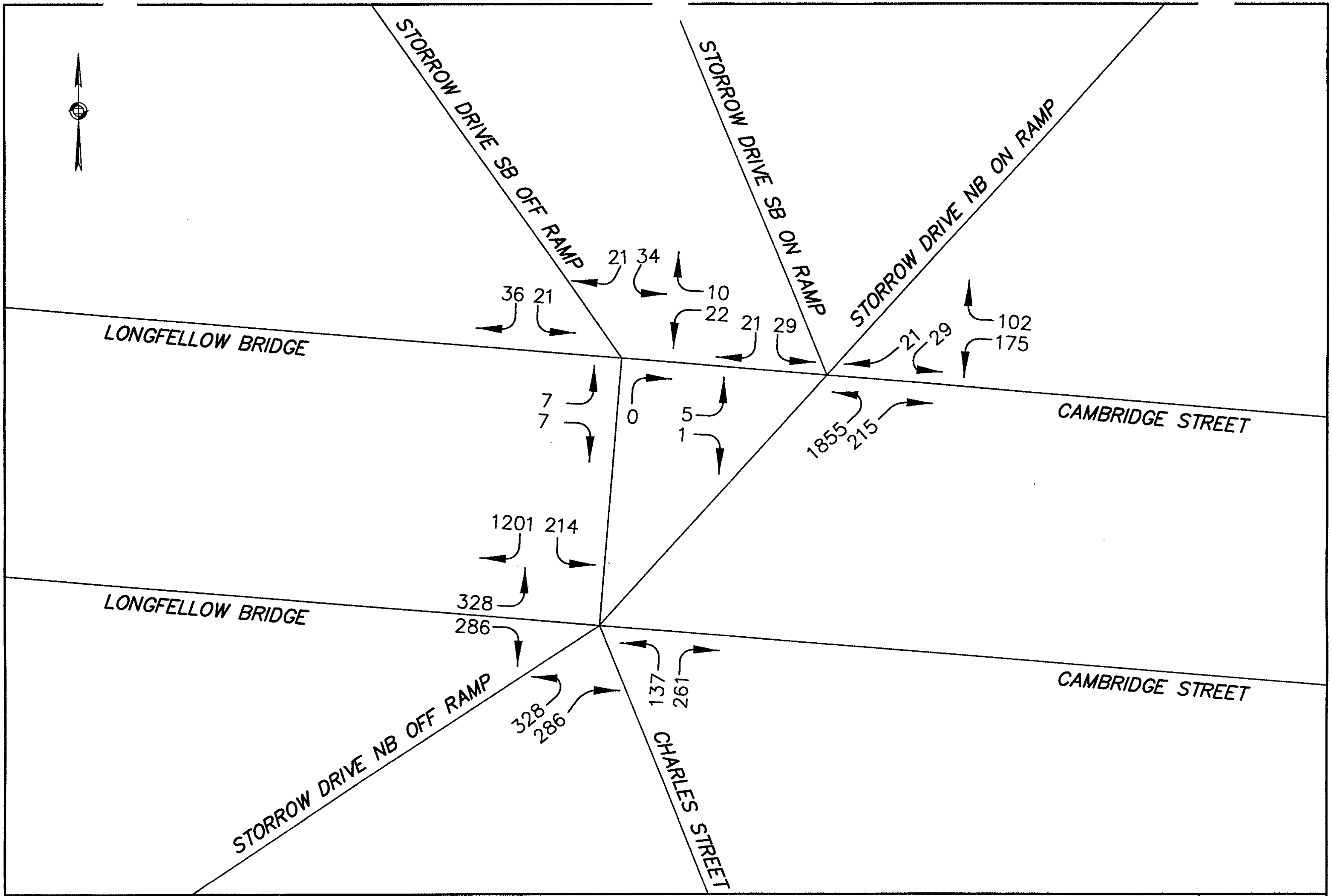
BOSTON, MA 02134

2006 PM PEAK HOUR
PEDESTRIAN COUNTS

FIGURE
B4A



C&C CONSULTING ENGINEERS, LLC
214 LINCOLN STREET
BOSTON, MA 02134

2006 PM PEAK HOUR
PEDESTRIAN COUNTS

FIGURE
B4B

C & C Consulting Engineers, LLC
TECHNICAL MEMORANDUM

DATE:	**April 6, 2006**
TO:	**Jonathan Taylor, P.E., Jacobs/Civil**
FROM:	**Preston Samuel, P.E., C&C Consulting Engineers**
PROJECT:	**Boston, Longfellow Bridge Restoration**
PROJECT NUMBER:	**20242**

MESSAGE:

As requested, C&C Consulting Engineers has investigated the feasibility of traffic operations for several schemes being considered for the configuration of the eastbound approach to Charles Circle on the Boston side of the Longfellow Bridge. You requested this study during our March 14, 2006 meeting in response to concerns over historic preservation impacts, should the approach have to be widened and the southeasterly retaining wall/wing wall have to be relocated.

This analysis investigates the operations of two schemes for accommodating vehicular and bicyclist traffic on the eastbound approach. They are as follows:

Scheme A:	Scheme B:
One ten-foot left turn lane	One eleven-foot left turn/through-traffic lane
Two eleven-foot through-traffic lanes	One eleven-foot through-traffic lane
One four-foot bicycle lane	One four-foot bicycle lane

Both analyses were based on traffic counts taken between Monday, October 31, 2005 and Saturday, November 5, 2005. Traffic was not seasonally adjusted because it was found that the counts were within a half percent of the average annual traffic figures for this location. Traffic was projected ahead to the "opening year" of 2012 and the "design year" of 2022 using a 1.5% annual growth factor for the morning peak hour, and 1.0% for the evening peak hour. A representative of the Central Transportation Planning Staff recommended these growth factors to us recently.

The level of service for the overall intersection operations, computed using the methodology of the Highway Capacity Manual, is the principal determinant of the feasibility of either scheme. A level of service "D" is generally considered to be the minimum acceptable level for urban areas such as Charles Circle. The average vehicular delay is a refinement of the measure of level of service. A level of service "D" is defined as having average vehicular delays greater than 35 seconds, but less than or equal to 55 seconds. The volume to capacity ratio is also a good indicator of the possible performance of either scheme. Ratios greater than one indicate excessive demand for throughput in the intersection as a whole. The final measure of feasibility would be the predicted length of queues on the approach being analyzed. The 50th percentile queue computation gives a good feel for the level of congestion predicted for the average peak hour of analysis, while the 95th percentile queue computation is generally used for design of the queueing bays approaching the stop line.

Table 1, below, summarizes our analyses of the levels of service, average delays and volume-to-capacity ratios predicted for the overall intersection for both schemes using Synchro software. Table 2 summarizes the predicted queue lengths for the eastbound travel lanes.

AM	2012			2022		
	LOS	DELAY	V/C	LOS	DELAY	V/C
Scheme A	D	53.1	1.04	F	91.8	1.22
Scheme B	E	75.5	1.13	F	132.4	1.36
PM	2012			2022		
	LOS	DELAY	V/C	LOS	DELAY	V/C
Scheme A	D	49.2	1.03	E	64.3	1.11
Scheme B	F	89.2	1.12	F	124.7	1.27

Table 1 - LOS, Delay, and V/C ratio

AM	2012		2022	
	50th	95th	50th	95th
Scheme A	311	416	410	521
Scheme B	422	533	674	788
PM	2012		2022	
	50th	95th	50th	95th
Scheme A	545	806	690	930
Scheme B	1017	1044	1242	1255

Table 2 - Queues

As seen in Table 1, Scheme A is predicted to offer a marginally acceptable level of service for the "opening year" of 2012, while Scheme B is predicted to offer unacceptable levels of service both for the morning and the evening peaks periods of the average day. Both schemes offer unacceptable levels of service in the design year of 2022. The fact that the delay associated with Scheme A during the 2012 morning peak is very close to the acceptable limit of 55 seconds indicates that even the three-lane scheme would "fail" shortly after the opening year.

In recognition of the above-discussed "failure" and the desire of the project team to preserve the historic resources, we conducted an overview of existing conditions in an attempt to find other ways to add capacity to Charles Circle. There appears to be only one other way that is reasonably economical and perhaps compatible with preservationist's objectives, and that is to combine Scheme B with a three-lane approach ramp between Storrow Drive inbound and Charles Circle. The ramp would consist of three eleven-foot lanes, with no shoulders left or right. Table 3 summarizes the results of this "Scheme C" investigation.

	2012			2022		
	LOS	DELAY	V/C	LOS	DELAY	V/C
AM	D	49.4	1.04	F	92	1.32
PM	E	73.4	1.07	F	100.9	1.19
	50th	95th		50th	95th	
AM	282	502		533	646	
PM	995	1022		1185	1199	

Table 3- Scheme C Operations

As can be seen, the scheme would not provide an acceptable level of service during the evening peak. This is because of the large volume of traffic crossing the bridge from Cambridge and taking a left turn onto Storrow Drive inbound. The above-described analyses suggest that only Scheme A, the three-lane scheme, can offer an acceptable level of service in the near term.

Recognizing that even Scheme A is predicted to fail in the future, we investigated the assumed growth rate factors in greater detail. Additional discussions with our contact at the Central Transportation Planning Staff revealed the following:

- Traffic volumes in Downtown Boston tend to follow the local business cycles.
- Volumes have fallen in the recent past, but are now recovering.
- The predictions given above are for the next five-year period.
- No prediction was offered beyond five years.

Based on this additional information, one could conclude that our assumption that traffic volumes would continue to grow through 2022 might be too conservative. Perhaps it is more likely that business volume will continue to cycle at roughly a ten-year frequency, and that traffic volumes would do the same. If that assumption were true, Scheme A would most likely be "comfortably snug" beyond the opening year of 2012, while Schemes B and C would continue to be unacceptable.

Please contact me if you wish to discuss our projections in detail.

PLS

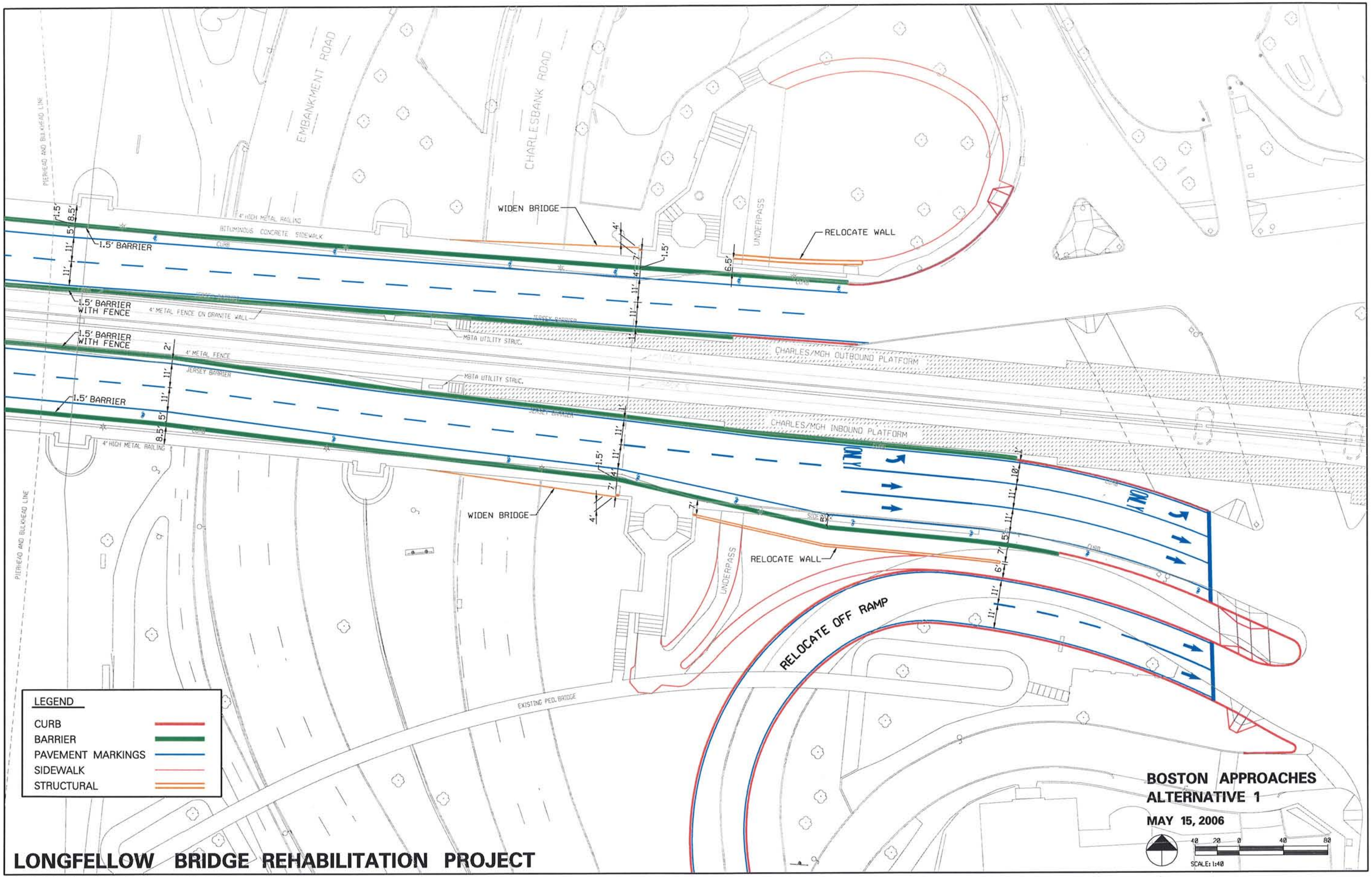
Attachment 8

Alternatives

Longfellow Bridge Rehabilitation and Restoration Project

Table 1
Comparison of Alternatives
Approach to Charles Circle at the Constrained Area at the Boston Abutment
May 15, 2006

	EXISTING CONDITIONS	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 2A	ALTERNATIVE 3	DESIRABLE
Name	Existing Conditions	Three Lane Alternative	Three Lane Alternative with a Compromised Bicycle Lane and Roadway Lanes	Three Lane Alternative with a Compromised Bicycle Lane	Two Lane Alternative	-
Description	Left Roadway Lane Transitions to Left Turn Lane; Right Roadway Lane Transitions to Two Very Narrow Through Lanes; Bicycle Lane is Continuous; Sidewalk is not Continuous over the Very Narrow Outrigger Walkway.	Left Roadway Lane Transitions to Left Turn Lane; Right Roadway Lane Transitions to Two Through Lanes; Bicycle Lane Narrows and is Continuous; Sidewalk Narrows and is Continuous.	Left Roadway Lane Transitions to Left Turn Lane; Right Roadway Lane Transitions to Two Through Lanes; Bicycle Lane Narrows and Merges into Roadway Lane; Sidewalk Narrows and is Continuous.	Left Roadway Lane Transitions to Left Turn Lane; Right Roadway Lane Transitions to Two Through Lanes; Bicycle Lane Narrows and Merges into Roadway Lane; Sidewalk Narrows and is Continuous.	Left Roadway Lane Transitions to Left Turn Lane; Right Roadway Lane Transitions to Single Through Lane; Bicycle Lane Narrows and is Continuous; Sidewalk Narrows and is Continuous.	-
Offset from Barrier at Red Line Right of Way	1 foot	1 foot	1 foot	1 foot	1 foot	2 feet
Left Roadway Lane Width	10 feet	11 feet	10.5 feet	11 feet	11 feet	12 feet
Right Roadway Lane Width	10.5 feet	11 feet	10.5 feet	11 feet	11 feet	12 feet
Bicycle Lane Width	3.8 feet	4 feet	3.5 feet and then merging into 14 foot roadway lane	3 feet and then merging into 14 foot roadway lane	3 feet	5 feet and then merging into 16.5 foot roadway lane
Barrier Width	1.5 feet	1.5 feet	1.5 feet	1.5 feet	1.5 feet	
Sidewalk Width at Pinch Point	4.3 feet	7 feet	3.5 feet	3 feet	3 feet	5 feet
Steel Structure Modification	-	Increased Overhang of Sidewalk Cantilever Support of 2 feet	None	None	None	-
Masonry Retaining Wall Modification	-	Moved Outward by 12 feet	Moved Outward by 5 feet	Moved Outward by 5 feet	Replacement of Short Missing Section	-
Other Masonry Modifications	-	Cutback of Parapet Wall and Sidewall of Stairway	None	None	None	-
Outrigger Walkway Modification	-	Removed	Removed	Removed	Removed	-
Overall Characterization	-	This alternative provides desirable widths for almost all cross section elements but the increased overhang of the cantilever supports of the sidewalk that is necessary compromises the continuity of the appearance of the bridge.	This alternative compromises the continuity of the bicycle lane, the width of the sidewalk, and the width of the roadway lanes in order to avoid any need for widening of the bridge structure.	This alternative compromises the continuity of the bicycle lane and the width of the sidewalk in order to avoid any need for widening of the bridge structure.	This alternative provides only a single through lane in order to avoid any need for widening the bridge structure.	-
Advantages	-	All transportation functions of the bridge – rail, roadway, bicycle, and pedestrian - have continuous links of acceptable width.	The steel structure of the bridge is not affected.	The steel structure of the bridge is not affected.	The steel structure of the bridge is not affected and the masonry retaining wall does not have to be moved.	-
Disadvantages	-	The steel structure of the bridge is affected; there will be a discontinuity or an angle point in the line of the outboard railing; the shadow line that the cantilevered sidewalk section throws will be changed.	The continuity of the bicycle lane is lost; the sidewalk width and the roadway lane widths are less than desirable.	The continuity of the bicycle lane is lost; the sidewalk width is less than desirable.	There will not be appropriate queuing lengths for traffic waiting at the stop condition at Charles Circle; traffic will back up onto the bridge, moving to the desired turning lane will be more difficult, and waiting times will be longer.	-



BOSTON APPROACHES ALTERNATIVE 1

MAY 15, 2006

LONGFELLOW BRIDGE REHABILITATION PROJECT

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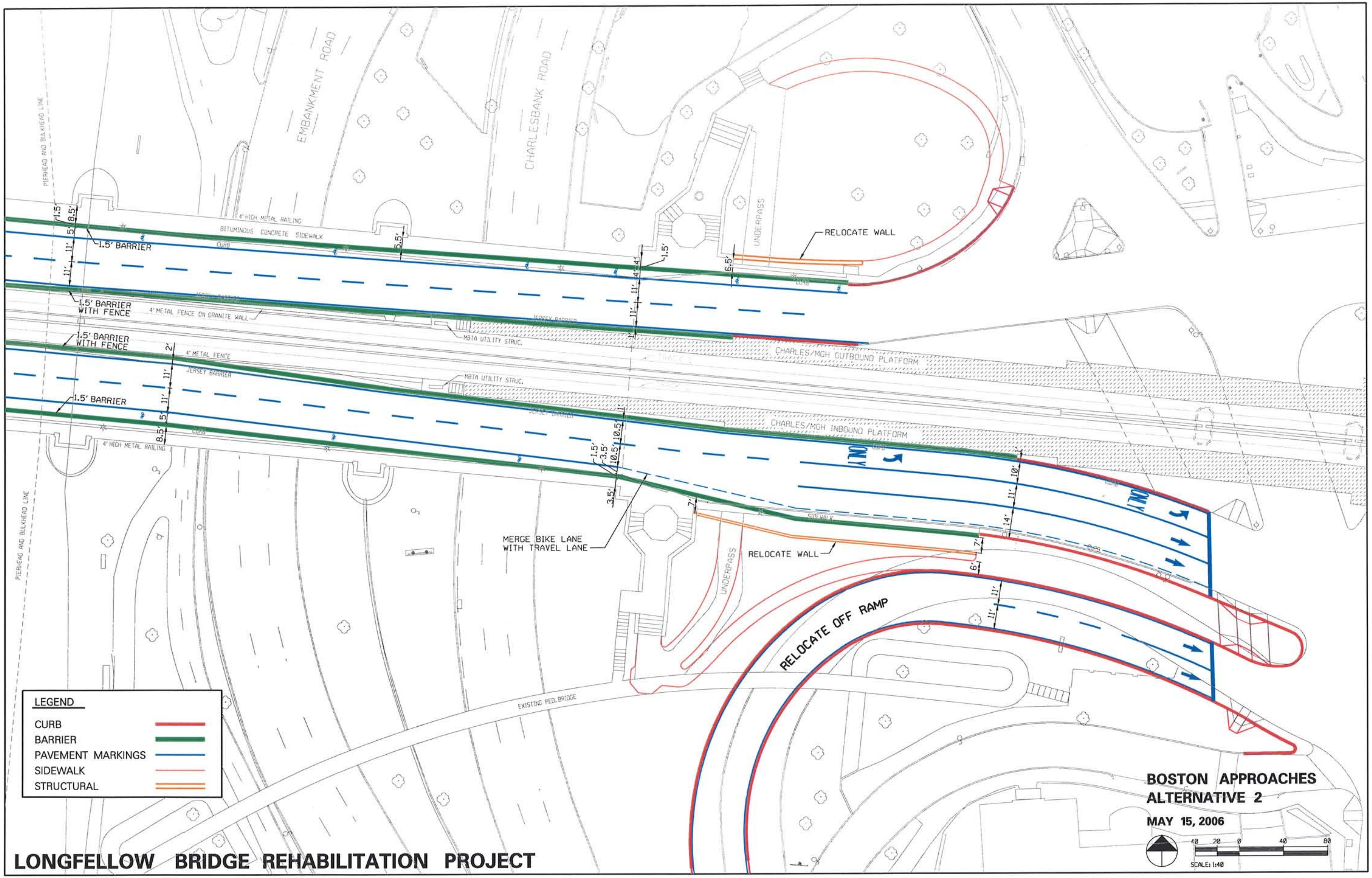

LONGFELLOW BRIDGE REHABILITATION PROJECT

BOSTON APPROACHES
ALTERNATIVE 2

MAY 15, 2006

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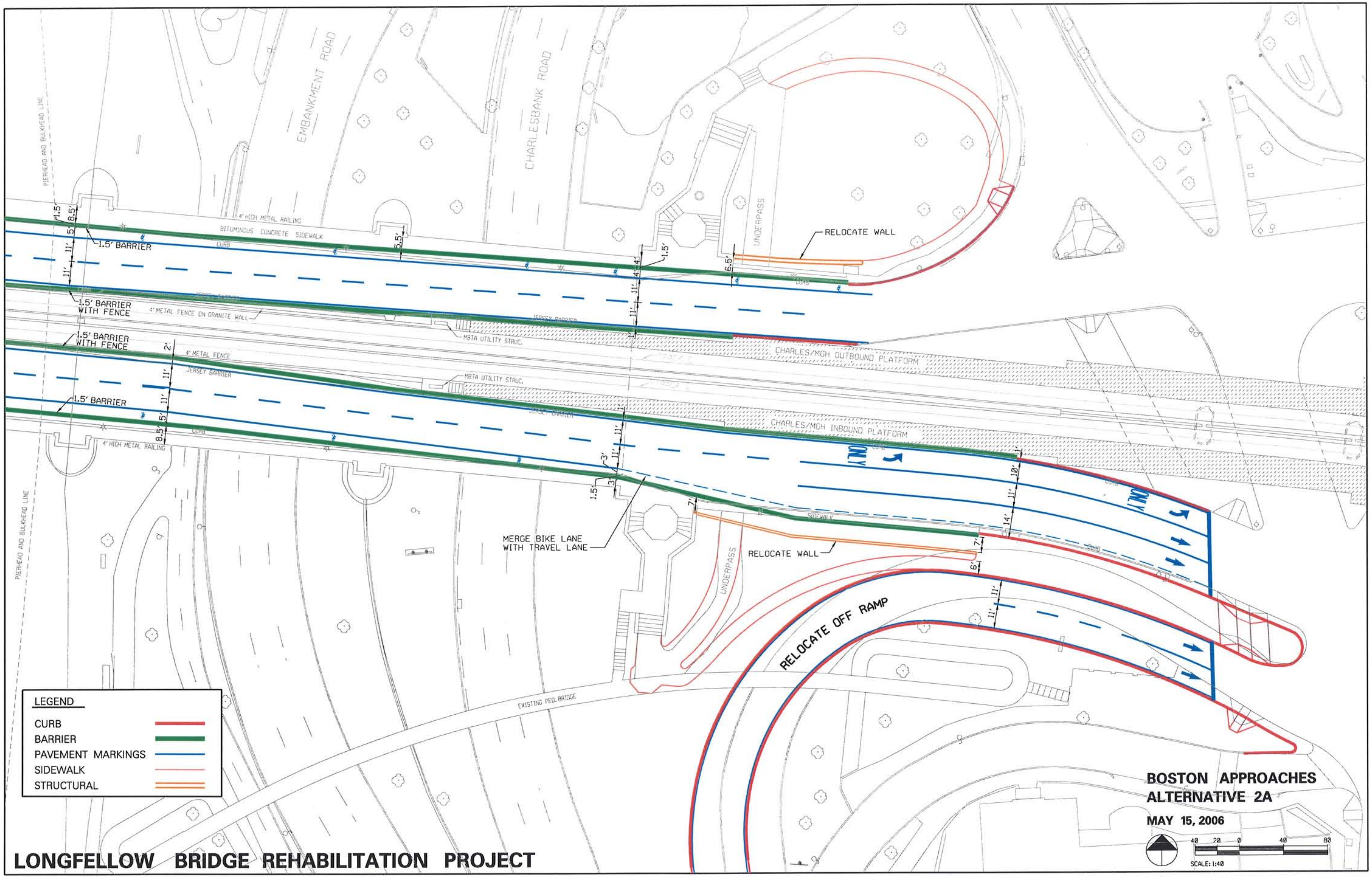

BOSTON APPROACHES
ALTERNATIVE 2A

MAY 15, 2006

LONGFELLOW BRIDGE REHABILITATION PROJECT

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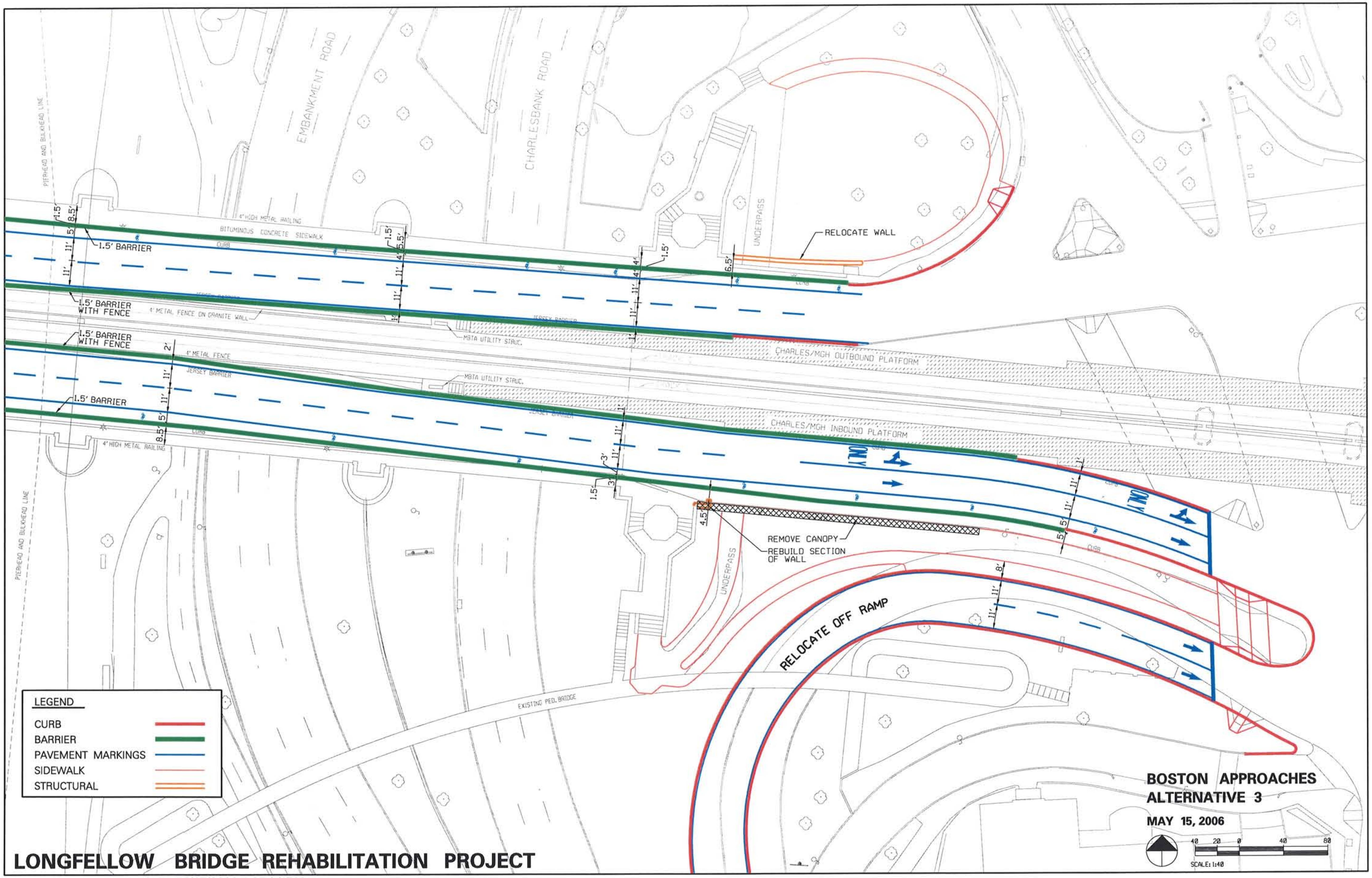

LEGEND

CURB	🟥
BARRIER	🟩
PAVEMENT MARKINGS	🟦
SIDEWALK	🟥
STRUCTURAL	🟧

LONGFELLOW BRIDGE REHABILITATION PROJECT

BOSTON APPROACHES
ALTERNATIVE 3

MAY 15, 2006

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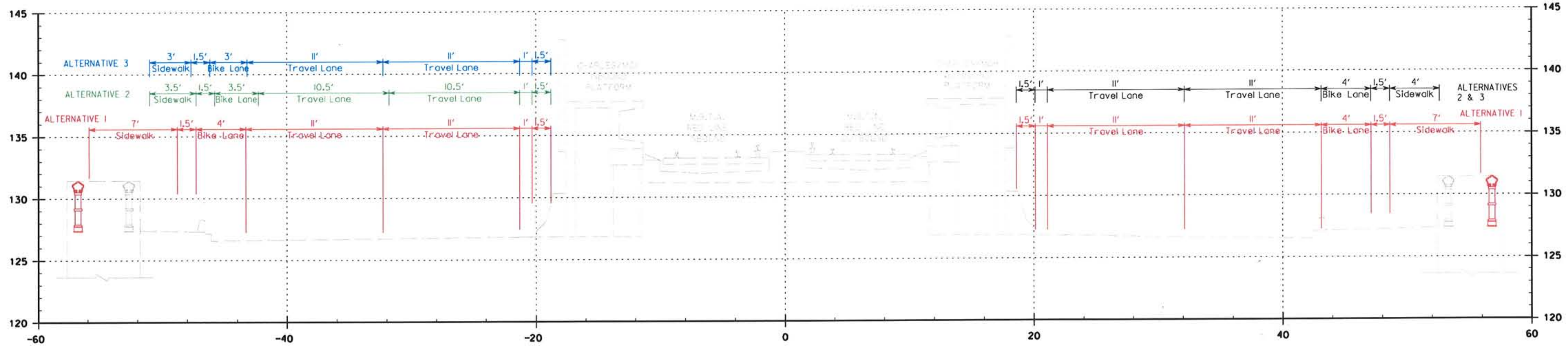
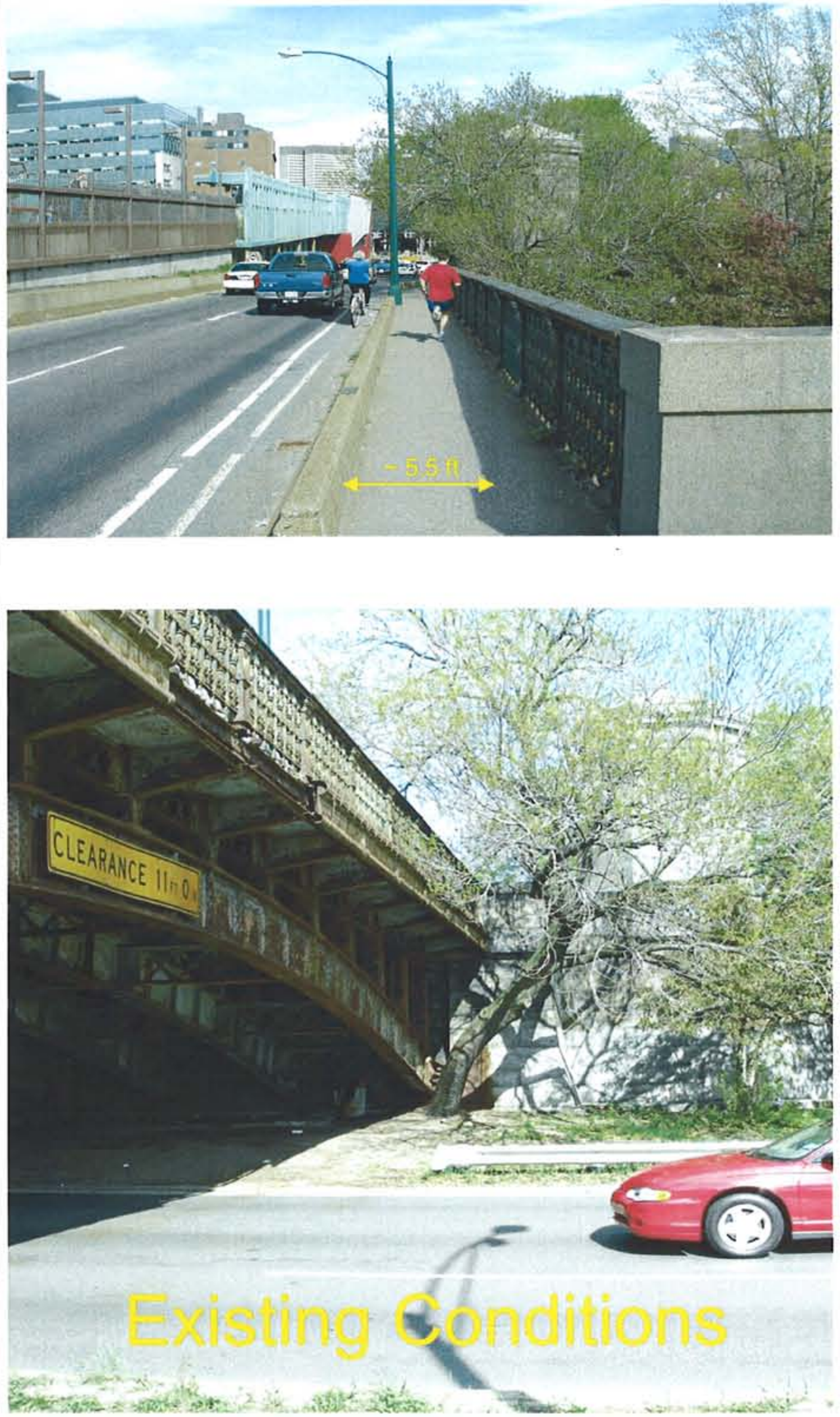


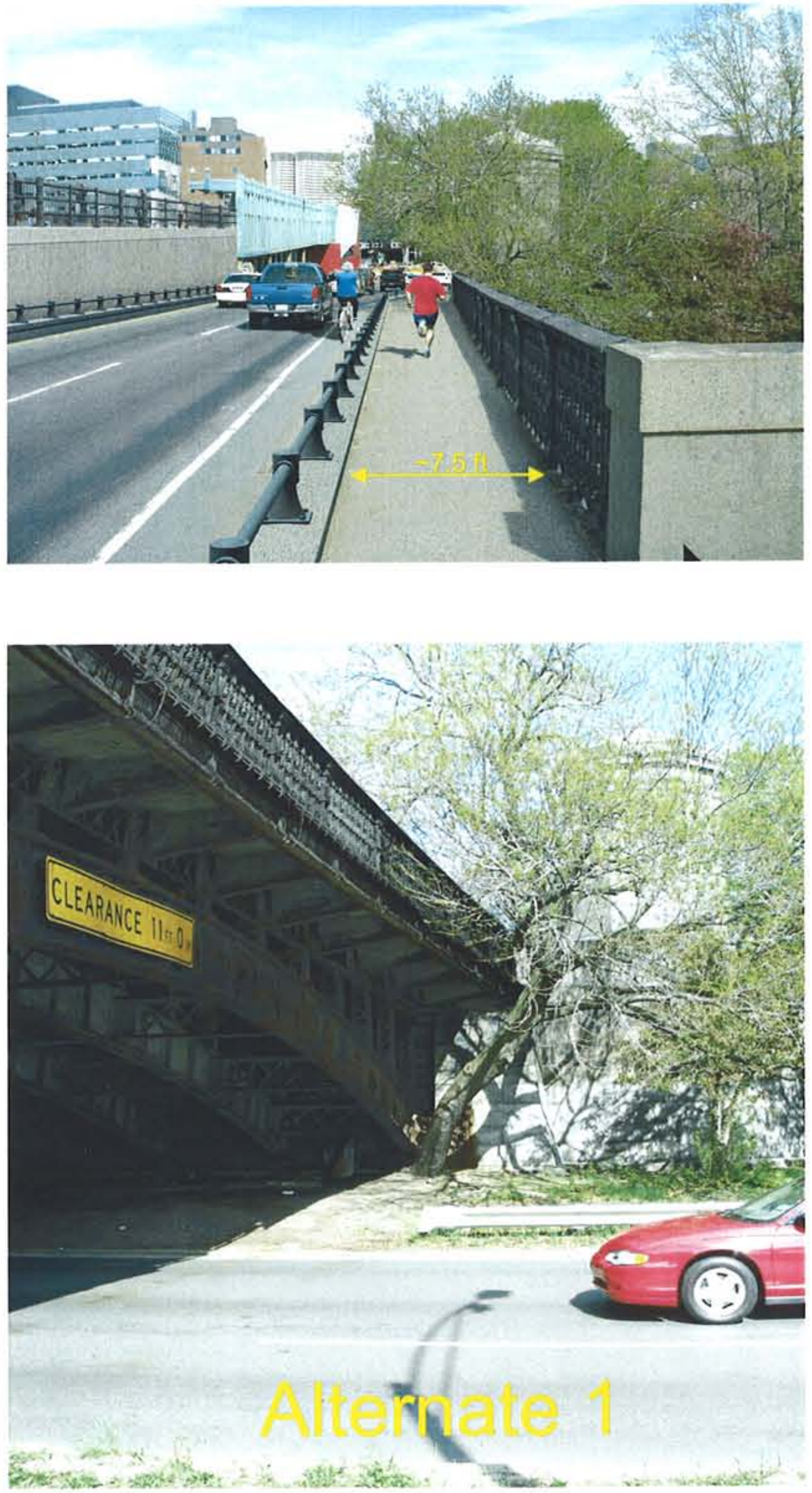
AT PINCH POINT

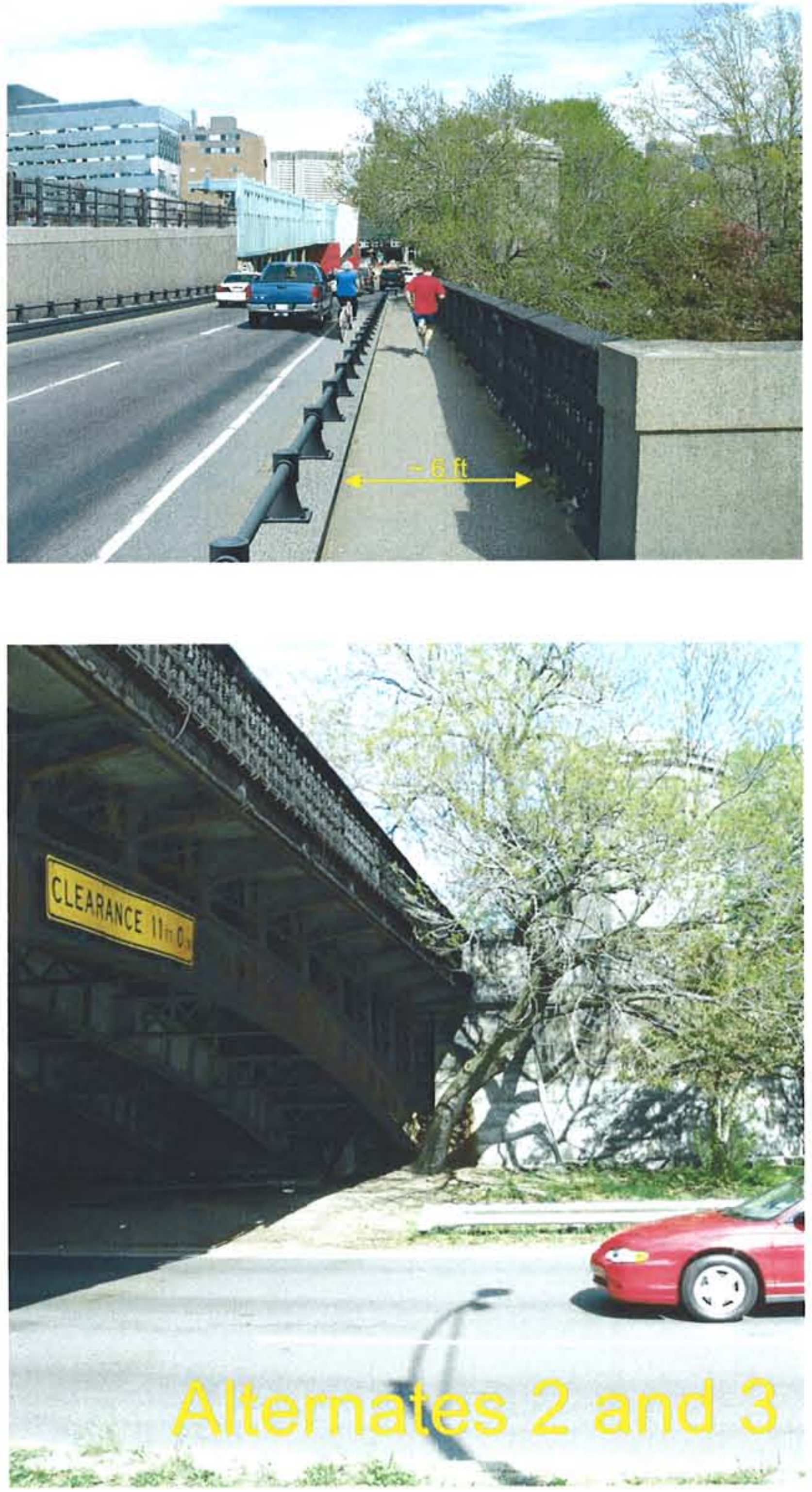
BOSTON APPROACHES
CROSS SECTIONS

MAY 15, 2006

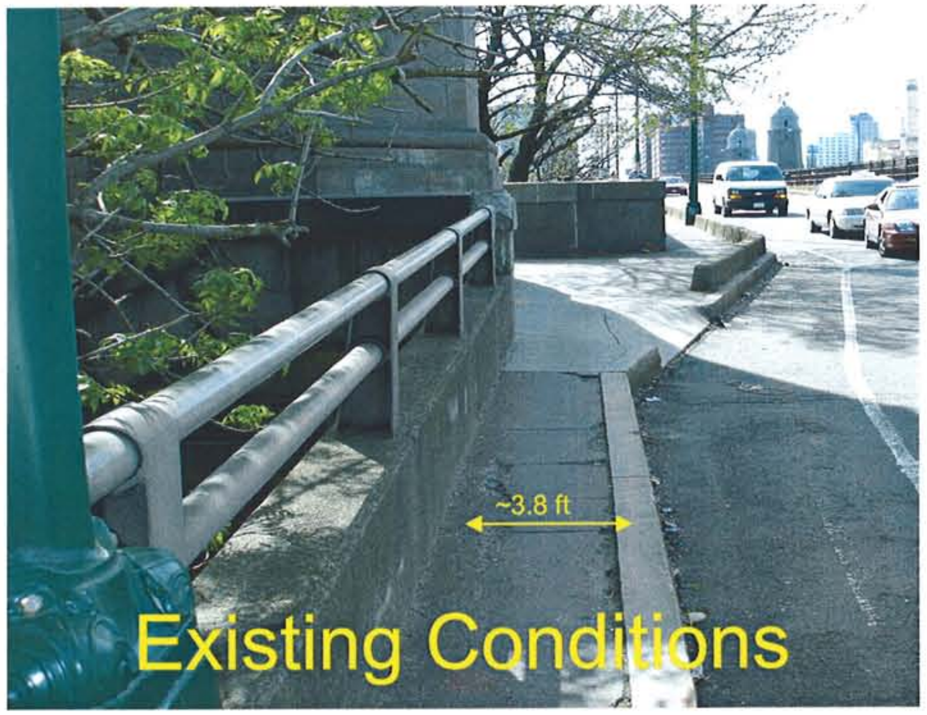
LONGFELLOW BRIDGE REHABILITATION PROJECT

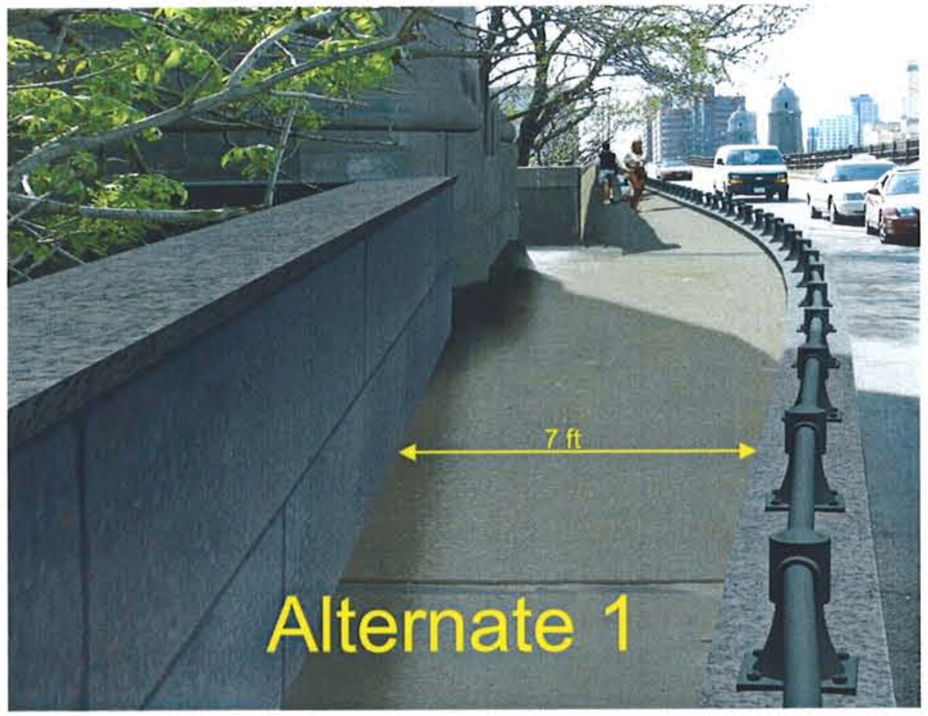


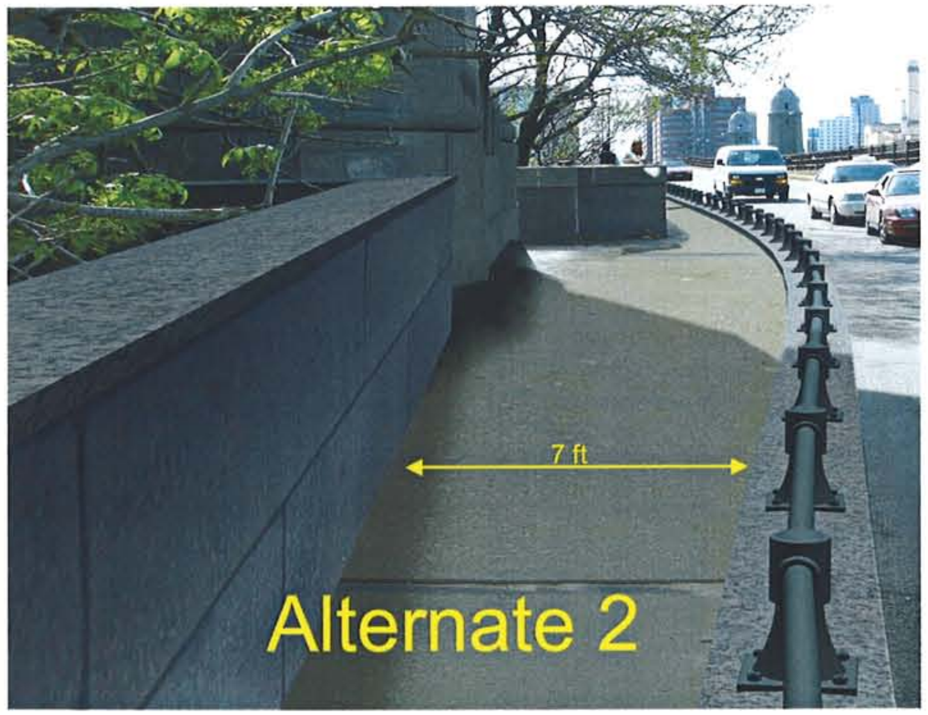


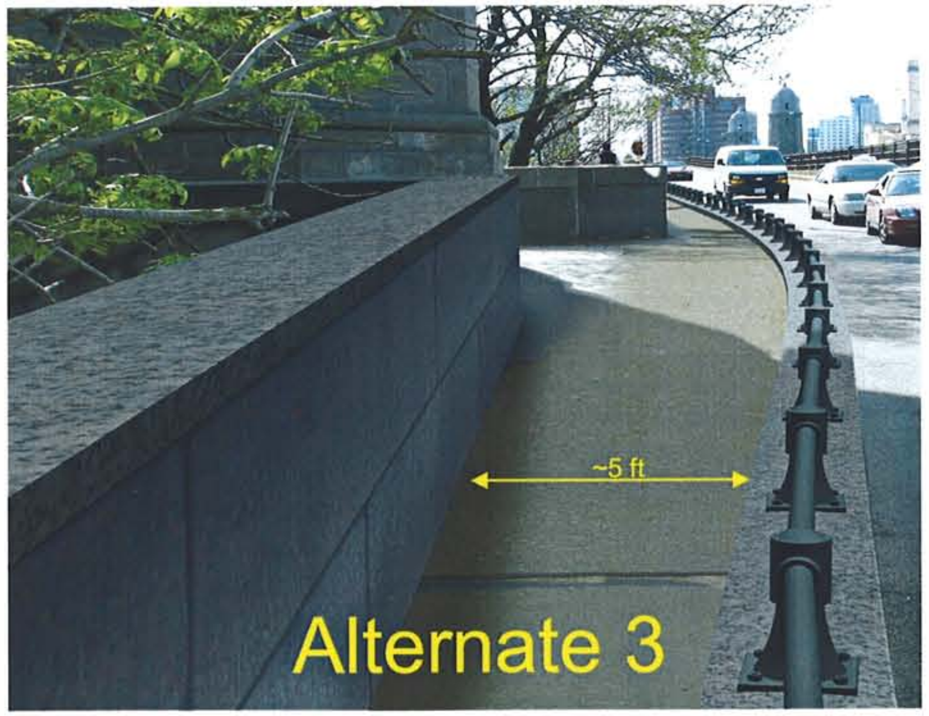


MASS HIGHWAY dcr	JE JACOBS	Rehabilitation and Restoration of the Longfellow Bridge	Boston Approach Photo-Visualization of Alternatives 1 thru 3	September 2006
	Rosales Gottemoeller & Associates	Environmental Notification Form		









MASS HIGHWAY

dcr

JE JACOBS

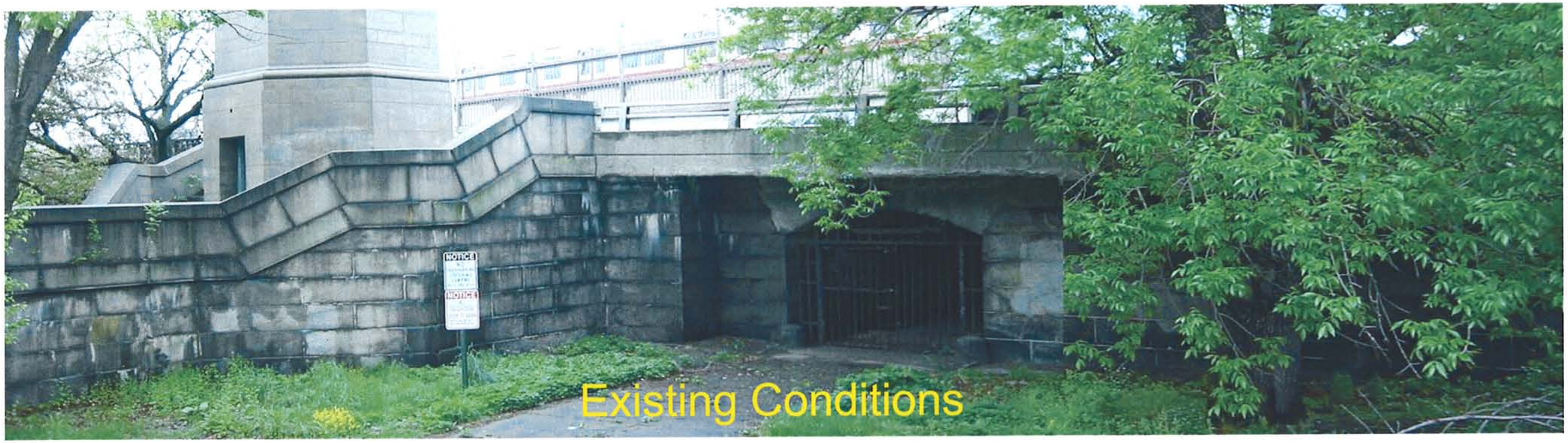
Rosales Gottemoeller
& Associates

**Rehabilitation and Restoration
of the Longfellow Bridge**

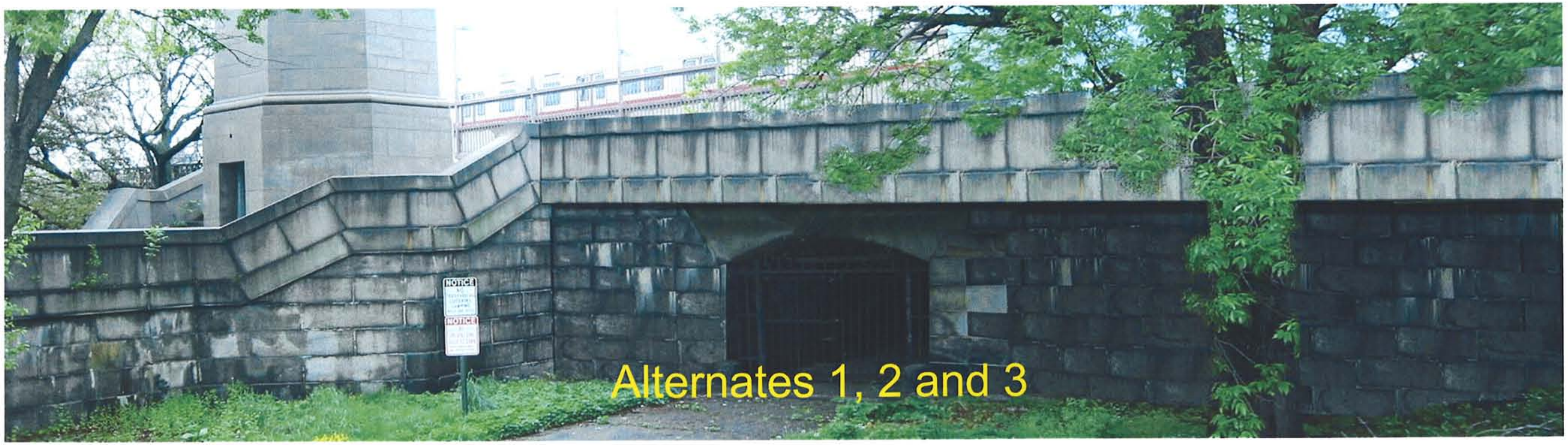
Environmental Notification Form

**Boston Approach
Photo-Visualization of
Alternatives 1 thru 3**

September 2006



Existing Conditions



Alternates 1, 2 and 3

MASS HIGHWAY dcr	JE JACOBS Rosales Gottemoeller & Associates	Rehabilitation and Restoration of the Longfellow Bridge Environmental Notification Form	Boston Approach Photo-Visualization of Retaining Wall	September 2006